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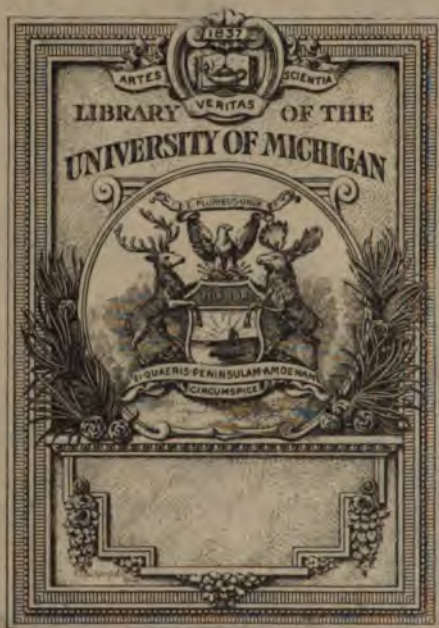
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P R E F A C E.

THE aim of this work is given in its title. First, it is an "introduction" only, and does not go into the details or the literature of the subject. The aim is to point out the highways of psychology, rather than its myriad by-ways. Secondly, it is an "introduction to psychological theory," and aims less at a knowledge of facts than at an understanding of principles. Until principles are settled there is no bar to the most fantastic theories and interpretations.

These principles being illustrated in the most common facts of experience, it is not necessary to psychological insight to make an anthology of madhouse and hospital stories. Such a procedure has about the same relation to psychology that the various books of "wonders" or the "brilliant experiments" of the popular lecturer have to sober physical science. An odor of quackery is perceptible in both cases.

The plan of the work precludes much attention to physiological psychology. Whatever the merits of this science may be, it presupposes pure psychology. If our aim is to give a physiological explanation of psychological facts,

we must first know the facts. Or if our aim is the more modest one of finding the physical conditions or attendants of mental facts, again we must know the facts. But this knowledge is not possible by the way of physiology, and in any case the mental facts remain what they always were. Their likenesses and differences and essential nature would not be changed if physiology were supreme. Even the "new psychology" would not give us new mental facts, but only a new interpretation of the old facts. The *Zeitgeist* itself begins at last to see this; and the naïve onslaughts on the "old psychology" are happily growing fewer. Psychological literature shows very marked progress in this respect within the last twenty years. Physiology remains a most estimable science, but the physiological reconstruction of psychology has been postponed. The study of the physical conditions of our mental life has a pathological and practical importance; but it does not promise any valuable psychological results, at least for those who can distinguish between the physical conditions and the mental facts which they condition.

The limitation of plan involves many omissions; and in these there will seem to be a measure of arbitrariness. Hence many will not find here what they want, and probably still more will find what they do not want. There seems to be no way of adjusting so grave a difficulty except by maintaining, on the one hand, freedom to publish, and, on the other, freedom not to read.

BORDEN P. BOWNE.

Boston, September, 1886.

INTRODUCTION

TO

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PSYCHOLOGICAL THEORY

BY

arlen
BORDEN P. BOWNE

PROFESSOR OF PHILOSOPHY IN BOSTON UNIVERSITY
AUTHOR OF "METAPHYSICS"

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PSYCHOLOGY.

INTRODUCTION.

PSYCHOLOGY deals with mental facts and processes. It aims to describe and classify those facts and processes, to discover and state their laws, and to form some theory concerning their origin and cause. Corresponding to this complex aim, psychology, like all other sciences, may be descriptive and theoretical. We may content ourselves with simply describing and classifying the facts and processes. The result is empirical psychology. From this as a starting-point we may go on to theorize concerning the origin and causes of the facts and processes discovered. The result is theoretical, or philosophical, psychology. But in psychology, as in most other sciences, these two factors, though logically successive, are practically contemporaneous. No science completes its collection of facts before it begins to theorize; but the study of fact and the formation of theory go together. This is especially true in psychology, where the statement of the facts themselves often involves a theory.

Psychological study may take several directions:—

1. We may study the facts and laws of mind in general, without reference to individual peculiarities or to concrete application. In this case the aim is to discover the essential facts and factors of the mental life. By observation we

learn the facts and processes ; by analysis we seek to decompose them into their ultimate elements ; and, finally, we seek to exhibit the actual mental life as a synthesis of these elements. The product of such study is pure or abstract psychology.

2. The mental life is not perfect from the start, but is subject to a law of growth. We may study it, then, from the genetic side, and trace the order of its unfolding. Such study would have especial significance for the theory of education. Some speculators have thought it possible by this method, not merely to discover the order of temporal development, but also to deduce the later stages as necessary results of the earlier ones. We shall find reasons for doubting this view.

3. The mental life is physically conditioned ; and, instead of studying mental facts by themselves, we may study them in relation to the organism. This gives rise to a border science, physiological psychology. This does not study physiology in general, but physiology in its relation to mental facts. Nor does it study psychology in general, but psychology as conditioned by the organism.

Pure psychology is plainly the presupposition of all other forms of psychological study ; as pure logic or pure mechanics is the presupposition of applied logic or applied mechanics. Our work will be mainly in pure psychology, partly descriptive, partly theoretical, and not without some reference to physiology.

The facts of the objective sciences are discovered through the senses. The facts of psychology are chiefly revealed only in consciousness. Instead of looking without to find them, we look within. Our method, therefore, must be mainly introspective. Mind can be studied to some extent in history, in institutions, in literature, and especially in language. In these we see the mind manifesting its nature, and uttering its spontaneous and unsophisticated convic-

tions. Language abounds in psychological theories and classifications, which serve as the starting-point even of scientific psychology. Thought, feeling, and volition; sensation, emotion, and understanding; desire, choice, and effort; body, soul, and spirit, — are illustrations. Such terms represent classifications, distinctions, and theories produced by the spontaneous thinking of mankind. Again, the structure of language itself is an incarnation of the laws of thought; so much so, that Aristotle sought to determine the essential categories of thinking by an analysis of grammatical forms. The noun, the adjective, and the active verb are but the reappearance under the forms of language of the thought-forms of substance and attribute, cause and effect. In this sense there can be an objective study of thought. This does not mean, of course, that mind or thought can be presented to the senses; but only that the nature of mind can be studied in its products.

Nevertheless, all our knowledge of mind derived from its objective study must come back to consciousness, either for its meaning or for its verification. No language concerning mental facts is intelligible unless we have had experience of the facts for ourselves. No theory of them is verified until we have compared it with the facts in our own consciousness and have found them to agree. Psychology, then, is finally based on introspection. It is a subjective rather than an objective science.

This fact has been made the ground for much objection. Some have denied the possibility of inspecting consciousness at all; others have denied the trustworthiness of consciousness. According to the latter, consciousness cannot even tell us whether we are cold or hot. The former claim has the slight psychological foundation that many mental states, pre-eminently emotions, cannot be directly inspected without changing their character to some extent; and therefore they have to be indirectly studied in memory. The latter

claim has the slight historical justification that careless writers have often extended consciousness beyond its proper limits; so that, instead of distinguishing between the facts of consciousness and their interpretation, they have made consciousness cover both. The proper facts of consciousness admit of no scepticism. The one who feels cold is cold; but it may be that this feeling, instead of its ordinary antecedent, has an abnormal state of the nervous system as its cause. We trust the consciousness even of the insane; doubt concerns only its interpretation. Remembering these limitations, any doubt of the trustworthiness of consciousness must seem palpably and flagrantly absurd.

Mental facts are nearest of all, and yet psychology develops slowly. The objective sciences are of an earlier birth and a more rapid growth. This is due to several facts:—

1. The mind is objective in its procedure, and thinks of itself last. We tend to lose ourselves in our objects; and the processes of knowing are so immediate, that it never occurs to us that there is a process. This fact has the highest significance for mental health and development. The mind is taken out of itself and introduced to the great world of things, the knowledge of which is to be its chief occupation and the great source of its growth. The implicit trust of the mind in knowledge is shaken only as it stumbles upon contradictions and absurdities, and is forced thereby to analyze its processes and revise its assumptions.

2. The phenomena are complicated, and often admit of no description. Shades of feeling and emotion may be felt, but not described. Language, too, is formed under the influence of external objects, and hence is vague, and often misleading, in its application to mental states. Moreover, the mind, because of its objective tendency, becomes

disinclined to look within. Our mental states do not stand out in consciousness with the sharpness of objects in space. Hence the paradox, that there is nothing so hard to study as ourselves.

3. The facts admit of no exact measurement. Physical science depends especially upon measurement, either of size, duration, weight, or intensity. Its facts and laws first become fruitful when they become numerical. The fact of gravitation was known long before Newton, and was of no significance. It was the discovery of its numerical law which first gave it meaning. But thoughts and feelings have no size; and their intensity admits of no exact numerical determination.

4. Psychology admits of almost no experiment. In physiological psychology a little experiment is possible; but in pure psychology no significant experiments can be made. It is, then, neither a mathematical, nor a deductive, nor an experimental science. We can only aim to describe and classify the facts, and to form some conception of their cause. On these accounts many have been pleased to deny that psychology is a science at all. They should rather say that it is not a certain kind of science. A systematic exposition of a certain set of facts, and a theorizing on them in accordance with their nature, constitute the science of that set of facts. It is only the mentally one-eyed who insist that all facts shall be treated by the same method, regardless of differences of nature.

No one has immediate knowledge of any mental life but his own. The mental life of all others is absolutely hidden from our senses. Their thoughts and feelings are open to no direct inspection. All we can see in connection with others is sundry changes and movements of the organism; and all we know of their inner life is reached by analogical inference, whereby we assimilate it to our own. Nor is it easy to find physical marks which certainly denote intelli-

gence. In the case of man, they consist chiefly in the voluntary movements and in language. For the animals, we have only the voluntary movements. In both cases, the facts of reflex action often make it doubtful whether what we call voluntary movements are really such; and in both cases, also, their interpretation must be learned from within. It is plain, then, that the starting-point of psychology must be the analysis of the individual consciousness. Oversight of this patent fact has led to the fancy that psychology ought to begin by studying the mental phenomena of the lower animals. The inverted nature of the procedure is apparent; and the result is anthropomorphism in biology. We first assimilate the animal mind to the human mind; and then we are quite ready to comprehend the latter as the outcome of the former.

But, on the other hand, no complete knowledge of the human mind can be gained by a study of the individual consciousness alone. This consciousness itself is evoked only under social conditions; and the individual is never a complete or perfect specimen of the race. To escape the narrowness and one-sidedness of individualism we need to go out into the open field of the world, — into life, and history, and literature. Only thus can we eliminate individual variations from the type, and get some conception of the human mind in general, as distinct from its imperfect specimens.

In beginning our study several roads open before us. We might recite the various schemes of psychological classification, and select some one as a guide for our further study. Or we might observe that consciousness is a condition of all mental operations, and begin with a general discussion of the nature and conditions of consciousness. We shall do better, however, to postpone these questions and follow another order. We begin with a discussion of

the subject of the mental life ; then we pass to the impressions which that subject receives from without, and with which the mental life begins ; and, finally, we consider the complex action and reaction upon those impressions in which the developed mental life consists. And first of all, we discuss the subject and the factors of the mental life, leaving their combination for later study.

PART I.

THE FACTORS OF THE MENTAL LIFE.

PART I.

THE FACTORS OF THE MENTAL LIFE.

CHAPTER I.

THE SUBJECT OF THE MENTAL LIFE.

IN all mental experience the self appears as the subject of the mental state; and the state is referred to the self as its subject. There is no such thing in experience as pure feeling, or knowing, or willing, without a subject that feels, or knows, or wills. Hence we may say that the simplest mental fact is at least double, involving a mental state and a subject of which it is a state. Thoughts and feelings apart from something that thinks and feels are unreal abstractions, like motion apart from something that moves. What is this something?

In spontaneous thought and consciousness the mental subject is given as active and abiding; and the race has constructed various names for it, as mind, soul, spirit, and their equivalents, to indicate its reality. The whole structure of thought and language also implies it. This conception of the mental subject we believe to be correct. It is disputed, however, on two general grounds:—

1. All mental states do not involve a reference to self as their subject.

2. The self, or mental subject, is only a compound product of mental states, and hence is subsequent to its components.

The first objection properly refers to the philosophy of self-consciousness. It does not deny that the mental acts

and states are really acts and states of a substantial mind. It only questions whether they always contain a conscious reference to self, or involve self-consciousness. We postpone its consideration, therefore, to a later chapter.

The second claim, so far as it differs from the first, denies the existence of any substantial mind, and regards the mind only as a collective term for the sum of mental facts. As a rule, these mental facts are viewed as sensations, either simple or compounded. Thoughts and feelings exist; but there is properly nothing that thinks and feels.

To this claim the obvious objection is, that we know nothing of mental states, sensational or otherwise, except as affections of some mental subject which has them. Moreover, we never can know of them apart from such connection. Not in the case of others; for mental facts can never be seen from the outside. Not in our own case; for then they would be known as ours. There is strictly nothing in experience to suggest that mental states can exist by themselves like things; on the contrary, experience declares that there must always be something which has them. The opposite view is not based upon experience, but is purely a deduction from a speculative theory. In addition, thought breaks down in the attempt to construe it. Mental states are first broken from the only connection in which they have any meaning; and then are mistaken for the ground of their own condition.

Again, allowing that they may exist apart from a subject, there is no way of accounting for the unity of the mental life. Let *a, b, c, d, e*, etc. be a set of sensations without any common subject, *M*; there is no way of uniting them in a common consciousness. If coexistent, they cannot be known as such; for no one knows anything of the others, each being only a particular sensation. For the same reason, they cannot be known as sequent. If they were the states of a common subject, *M*, they might

be grasped in a common consciousness and compared as coexistent or sequent, like or unlike ; but otherwise they remain external to one another and without any possibility of progress.

A concrete illustration may make this clearer. Let, then, *a, b, c,* and *d* be respectively a sensation of color, of odor, of taste, and of sound. Plainly no consciousness can be built out of these elements. The color knows nothing of the odor ; the taste knows nothing of the sound. Each is a particular and isolated unit ; and must remain so until some common subject, *M*, is given, in the unity of whose consciousness these elements may be united. For as long as *a, b, c,* etc. are all, there is no common consciousness, and hence no rational consciousness at all. We conclude, then, that the mental life, both in its elements and in its combinations, must have a subject. It is not only unintelligible, it is impossible, without it.

Various devices exist for evading this conclusion. The more uncritical use the language of spontaneous thought without a suspicion of the inconsistency. The less uncritical call their data mental states, states of consciousness, etc. ; and, by an easy transformation, states of consciousness become a consciousness of states. Affections of consciousness also are largely spoken of, and consciousness itself is proposed as a substitute for the soul. Thus consciousness is hypostasized into something above its alleged elements, and plays essentially the part of an active and rational subject. How there can be states which are states of nothing, and how consciousness, which is itself a mental state, can also have states, are questions passed over in profound silence.

It is instructive to note, in the writings of those who reduce the self to states of consciousness, how the abiding element maintains itself under some figure of speech. Thus Hume, in the chapter on personal identity, while reducing

the mind, or self, to a set of dissolving views, also speaks of the mind as the "theatre" in which all this takes place. The reader kindly consents to play the "spectator"; and thus by means of two figures of speech a philosophical doctrine is firmly established. A more common device is to speak of the mind as a "series"; and as we posit the series as self-identical in our thought, there is plainly a constant element, — the series itself. Or we are told of "the property of consciousness to know itself as the same in all the changes of its states." Here consciousness itself appears as an abiding subject, which distinguishes itself from its states and knows itself as the same. From such a game of hide and seek, progress unspeakable cannot fail to result.

The reasons for this procedure are various. There is often a profound ignorance of the nature of mental facts. More frequently there is a preconceived theory of what mental facts must be; and of course the facts must be made to fit the theory. This is often the case when psychology is approached from the physiological side. The facts are distorted and falsified from the start, in order to adjust them to a predestined explanation. That such a method must lead to error, or nonsense, or both, is self-evident.

This inverted procedure has been so common in psychology, and has wrought so much mischief withal, that a word or two of commonplace upon method in general may be allowed. First, we are never permitted to make our facts, but only to construe them. Yet in the face of this simplest rule of method, a large part of psychological study has been directed, not to explaining facts, but to explaining them away. Second, facts must always be taken as they are given, unless some reason be found in the facts themselves for modifying our conception; and in that case, also, the facts as given must furnish the starting-point. In the

objective sciences this is well understood nowadays; but in psychology it still needs to be emphasized. The science has been overrun and devastated by theorists, who had already decided what the facts must be; and by baptizing their arbitrary dogmatism science, they have won not a little glory. They have their reward.

To apply these considerations to the matter in hand. It is plain, that, if the mental subject be given as real and abiding, and as an integral element of consciousness, an element without which a rational consciousness is demonstrably impossible, then that subject is to be admitted as a fact until some other facts are discovered which make such admission impossible. The fact may be called metaphysical, or supersensible, or metempirical, or whatever else we may think disagreeable; nevertheless, we are bound in good faith to recognize it as a fact. The mind as it is must be the foundation of psychology, not the mind as we think it ought to be, nor even the mind as the *Zeitgeist* has decided it must be.

We have, then, a logical right to assume the reality of the mind, and to proceed to study its phenomena upon this assumption, with the proviso, of course, that, if any facts are found which shall conflict with this assumption, we shall modify it accordingly. However, the reality of the mental subject is so stoutly disputed by materialism on the basis of unquestionable facts, that we shall perhaps do better to consider this claim somewhat at length before going further.

By materialism is meant the doctrine that the mental subject is nothing substantial, and that mental facts are produced by the physical organism. This view rests upon the fact that the mental life is plainly conditioned by the organism, and that we know nothing of mind apart from a body. The physical and the mental life appear together, advance together, fail together, and disappear together.

An exclusive acquaintance with such facts, unbalanced by an exact knowledge of mental facts, leads very naturally to the conclusion that the mental life is only a function of the organism. The organism, in turn, is only a special material aggregate. In ancient materialism the soul was regarded as real, but material; in modern times, materialism has come to mean the denial of a substantial soul, and the reference of all mental activities to the physical organism.

At first sight this doctrine appears perfectly clear, but in fact it is rather confused. A common way of conceiving it is based upon the conception of organs and their functions. The function of the stomach is to digest; that of the glands is to secrete; and that of the brain is to feel, think, and will. For a long time a favorite formula was that the brain secretes thought, as the liver secretes bile. Of course the brain has other than mental functions; but among its various functions are those of thinking, feeling, and willing.

Such attempts to express the doctrine only destroy its tenability. They overlook the fact that the functions and products of all other organs are physical and material. Thus the secretory organs either eliminate their products from the blood, or make them out of matter taken from the blood. If now we are to regard thought as a secretion, it would follow that thoughts either exist in the blood or are made out of blood. In either case they might be collected and looked at, just as we collect and look at bile. But thought itself is immaterial. If we admit that its cause is material, we have still to affirm that thought itself is nothing material.

Again, it is said, with somewhat less of definiteness, that the brain produces thought; but the sense of this production is left unclear. Now all production in the physical realm consists, not in making something else, but in producing new movements and groupings of matter. The

change of motion and the new grouping are the effect. If now the production of thought is to be assimilated to physical production, we should have to say that a certain material grouping is a thought. As n atoms grouped and moving in a certain way do not produce, but are, a chemical molecule, so m atoms grouped and moving in a peculiar way do not produce, but are, a thought. As in the preceding case, such thoughts might conceivably be collected and looked at; and essentially the same absurdity reappears.

Once more, thought has been called a movement of matter; and, as motion is immaterial, this view seems less gross than those preceding. But motion is always the motion of something from one point to another, or along a certain path, with a certain velocity. Hence this view must read: The motion of M from A to B with velocity V is a thought, say a conception in physics or in political economy. But the more clearly we conceive the subject the more impossible we find it to connect it with the predicate. As well might we call the following line, ———, an aspiration, or a profound reflection, or a flash of insight.

These attempts to illustrate the doctrine only serve to make more clear the difference between physical and mental facts. All that is left is the claim that in some obscure way the mental life is the outcome of the physical organism. This doctrine we propose to examine. Throughout the argument matter will be conceived as atomically discrete, as that is the only conception admitted in physical science.

Materialism rejects the reality of the mental subject as apparently given in consciousness and as assumed by spontaneous thought, because the mental life is found to be profoundly dependent upon the organism, and more especially upon the brain and nervous system. But such dependence is ambiguous, and may be explained by either of two hypotheses:—

1. We may suppose that the organism produces the mental facts. This would explain the observed dependence.

2. We may suppose that the mind is distinct from the organism, but is conditioned in its activities by the organism. This also would explain the observed dependence.

The decision between these views can be reached only by studying all the facts of the mental life. If we find that one better explains and expresses the facts than the other, the decision must be in favor of that one. But before proceeding, it may be well to emphasize the ambiguity of the facts in question. For the most decided spiritualist, the body is the means for educating and inciting the mental life, and for putting the mind in connection with the outer world. Hence the mental state must be affected by the physical. If the nerves be disordered, they can only lead to disturbed mental action. An immature organism would not furnish the mind with the stimulus for a mature mental life. Again, as we know of other minds only through the organism, it follows that the disappearance of the latter would end all manifestation of the former.

It is the illogical imagination which finds in the facts of mental dependence upon the organism a sure proof of materialism. Common facts illustrative of the dependence of the mind upon the body, such as the influence of stimulants, the need of sleep, the depressing effect of familiar diseases, etc., do not affect us. But uncommon facts, as some occult discovery in brain physiology, or the influence of some new drug, these have profound significance. Yet, logically, the influence of a cup of coffee has as much significance as the newest fact of the hospital or laboratory. All alike are but specifications of the fact, known and confessed by all, that the mind is conditioned by the nature and state of the body. If these facts were all, the result would be a drawn battle. But there are certain capital facts of the mental life which make materialism an untenable theory.

The first great difficulty which materialism meets is the complete unlikeness of physical and mental facts. Body has form, position, solidity. Thoughts and feelings have none of these. The attributes of one cannot be ascribed to the other without absurdity. If we pass below visible body to the component elements, we come no nearer to thought, so long as we retain only the conceptions of matter which appear in physical science. The phenomena of matter as conceived by the physicist consist entirely in aggregation and movement; and the forces of matter are without exception moving forces, that is, their effect consists entirely in modifying the movement, position, and aggregation of the elements. But it is a simple matter of definition, that the elements, as thus conceived, will never explain thought, unless we assume that a given grouping is thought, which is absurd. All that our system provides for us is aggregation and movement; and no reflection on changes of motion and grouping will ever bring us to a point where we shall see that the next step must be a thought or feeling, something wholly incommensurable with either or both. We can conceive that such a system of elements might be so connected with a mental subject that their changes should be the ground for a thought or feeling arising in that subject; but otherwise we begin and end with the elements variously grouped and moving. A false conception of physical causation often misleads us here. We fancy that the elements may cause something apart from themselves, but in sound science all physical effects consist in some change of physical states resulting in some change of position, aggregation, and movement.

An apparent exception to this view is found in the facts of sound, light, etc. In these cases the elements produce effects unlike themselves. The sound is unlike the instrument; the light is unlike the vibrating ether.

The exception is only apparent. The vibrating instrument produces a vibrating atmosphere, which produces a vibrating nerve. So long as we remain in the physical realm, we have only movement, nor can any one pretend that in this realm a vibration must at last be reached which will have for its consequent, not a vibration, but a sound. The same applies to light. The exception is based on an ambiguity of the terms. The instrument does not produce sound in the psychological sense, but only vibration. The vibrating ether does not produce light in the visual sense, but propagates vibrations. And as long as we remain in the physical realm, with only physical conceptions, nothing more is possible.

A second objection to this claim has been based on the transformation of energy. This doctrine was supposed to teach that all material forces may pass into one another, or rather that there is but one force which manifests itself under various forms. From this it was concluded that physical energy may become mental energy, and conversely. This was pure mistake. The forces of matter are neither correlated nor transformed. Each of these remains as distinct and separate as ever. The doctrine applies only to the energies of matter, and these are nothing independent of the elements, but only their power of doing work, that is, their power to produce changes in material movements and aggregates. In whatever form they appear, they have this common quality, that they are expressed in some form of movement or aggregation.

So long as we employ only those conceptions of matter and force which suffice for physical science, it is strictly impossible to bring thought within the chain of physical cause and effect. It rather remains outside of it and incommensurable with it. So much may be received as universally allowed. Matter as the movable explains only motion and aggregation. But may it not be that we have

thought too meanly of matter? If we allow that the physical properties of the elements will not explain the mental life, why need we go outside of the elements for a special ground? Why not rather posit in the elements, along with the physical properties, another set of mental properties, different indeed from the others, yet belonging to the same subject? In certain relations matter manifests gravity; in certain others, affinity; in still others, magnetism; and finally, in others it manifests vital and mental properties.

Traces of this view are found throughout speculation. It first appears in the hylozoism of the Greeks, and may be called hylozoistic materialism. Modern materialists generally resort to it, and call for "new definitions of matter." There are many differences of detail among those who hold it, but all agree in assuming some mystic principle in matter which is the ground of its vital and mental manifestations. Some regard mentality as co-existent with all materiality, and propose to endow every atom with a kind of soul life, and to found even attraction on a kind of sentiency. Others allow the mystic attribute to play a part only in connection with the organism; elsewhere it has no significance. Some, as Hobbes, would endow the elements with "actual sense and perception," though lacking "the organs and memory of animals to express their sensations." Others would attribute to them only a confused sentiency, which in some peculiar way develops under favorable conditions into our conscious mental life. In fact, the theory has never been thought out into definiteness, but has existed as a vague conception of an indefinite possibility, upon which materialism might draw whenever it got into speculative straits. There is only the general conception that matter is more and better than we have been used to thinking. It is a double-faced substance, has an inner side, a subjective aspect, and is essentially something mystic and transcendental.

At first sight this view seems promising. It appears to overcome the opposition between materiality and mentality, at least to some extent. Instead of leaving them glaring at each other across an impassable gulf, it unites them as opposite manifestations of the same thing. But, first of all, let us try to understand the doctrine.

It is clear, to begin with, that this view is a distinct abandonment of the vulgar forms of materialism. There is no possibility of deducing mental facts from any physical facts and processes whatever. Matter, as we know it in physical science, is forever inadequate to the explanation of the lowest forms of sensation; but matter, as we do not know it, accounts for the mental life. Its physical properties explain only physics; its mystical properties explain life and mind. Moreover, it is as impossible to bring physical and mental facts into linear order on this view as it is on the spiritual theory. Each set of facts remains external to the other in both cases; but in the former we seem to secure a certain unity in our theory of things by attributing these incommensurable properties to the same subjects, instead of to two incommensurable classes of subjects, mind and matter.

In order to make the doctrine perfectly clear in its meaning, one or two other points have to be cleared up:

1. What are its relations to established physical science?
2. What is the relation of the physical and the mental facts in this theory?

As to the first point, physical science is built upon the denial of the hylozoistic conception of matter. Hylozoism for ages prevented the birth of physics, and a return to hylozoism would be its death. Physical science is built upon the sharp mechanical notions of inertia, momentum, velocity, mass, energy, etc. By the mental travail of centuries it has wrought these notions out; and all its successes have been due to them. Physics, there-

fore, had rather let other realms alone, than by annexing them to destroy the clearness and sharpness of its own conceptions. Where these conceptions apply, hylozoism is excluded.

This point deserves attention, as materialism has won considerable prestige from the mistaken fancy that it builds upon physics as its chief corner stone. In fact, however, the more faithful we are to physical conceptions, and the more clearly we grasp them in thought, the plainer becomes the impossibility of reaching the mental life. Physics needs no new definitions of matter. Materialism insists upon a new definition of matter.

The second point concerns the relation of physical and mental facts. We may call the changes of position, grouping and movement, the physical series, and the changes of thought, feeling, etc., the mental series. How does this doctrine conceive their relation?

This point has seldom been thought out. Several conceptions are possible.

1. The two series may be conceived as mutually independent, the physical series going along by itself, and the mental series by itself. But in that case we should simply have elements acting in two incommensurable ways, neither of which would have any significance for the other. In that case the mental series would be self-contained and independent so far as the physical series is concerned. Nothing that happens in the latter would be any ground for the movements of the former. The outcome would be idealism.

2. A rhetorical misunderstanding of the doctrine of correlation and conservation of energy has led to another view, in which both the physical and the mental series are mutually convertible expressions of a common energy. Why the one energy should have these antithetic forms; in what way one conditions the other; whether one form

might pass entirely into the other, so that all the energy of the system might become mental energy; whether physical energy disappears entirely from the physical system and vanishes into the mental realm; and whether there are irruptions of mental energy into the physical system, so as to produce a series of faults in both systems;—these are questions to which there is no answer. But a rhetorical misunderstanding calls for no elaborate criticism.

3. The desire to maintain the continuity and independence of the physical series has led to another conception, as follows. Each physical antecedent is expended in producing its physical consequent, and each consequent is fully explained by its antecedent. The physical series goes along by itself, receiving no modifications from without, and expending no energy except to produce new movements and groupings of matter, which effects in turn become causes, and produce other movements and groupings. The mental series is not caused by this series in a physical sense, but only attends it as a shadow attends its substance. Like a shadow, it costs nothing and determines nothing. Life and history are pure automatism. Thought attends nervous action, but does not affect it. Why it should do so, we cannot tell. Why it should attend one form of nervous action rather than another, is equally unknown. We must either refer it to magic, or else affirm some obscure harmony between specific forms of nervous action and the thoughts which are said to attend as their inner "face" or otherwise. In fact, those who have held this view have never been careful to think out its applications. Sometimes, in sheer forgetfulness, the mental series is called an aspect or phenomenon of the physical series. We have seen that the mental series is never phenomenal to any one but its subject; and where there is no subject there are no "aspects" and no "phenomena." Suppose n atoms turn in a left-hand spiral, love is an aspect of this fact. But for

whom? For the atoms? If so, for all or for each? If not for the atoms, for what or whom? For the motion itself, perhaps!

4. In order to leave no unintelligibility untried, some have claimed that the two series are identical. The thing-series considered subjectively is the thought-series; and the thought-series considered objectively is the thing-series. So far as this is intelligible, it is absurd. The thing-series is a set of moving molecules; the thought-series is a group of mental states. That one should cause the other, is an intelligible proposition; that one is the other, is meaningless. Moreover, this theory implies mind as the condition of its own existence; for the two ways of looking at the same fact seem to be founded, not in the reality, but in the mind which grasps it. How there can be two points of view is an important question for this theory, but as yet it has not been answered.

So far we have only sought to understand hylozoistic materialism. We have now to show that no interaction of a plurality of elements, no matter how mysterious or two-sided they may be, can explain the mental life without assuming a unitary subject of that life. The chief difficulties are these:—

1. Thoughts and feelings demand a subject, and have no meaning apart from it. Materialism, in alliance with sensationalism, has generally falsified experience at the start, by assuming that they may exist without a subject, and it derives most of its probability therefrom. If it were clearly seen that thoughts and feelings imply something that thinks and feels, materialism would seldom begin. If the materialist saw that he must explain, not only the occurrence of mental states, but also the existence of a mental subject, his task would seem more formidable. But we have seen that the mental subject is a precondition of the mental state. What, then, thinks and feels in my thinking and

feeling? We cannot say that the brain does; for (1.) while the brain may produce the thought, there is no ground for saying that it thinks the thought; and (2.) in any case the brain is an aggregate, and as such has its reality only in the elements which compose it. Apart from these it is nothing. Hence, to say that the brain thinks and feels, can only mean that the component elements think and feel. But which? All, or some, or only one? If only one, the unity and reality of the mental subject is admitted. If all or many think, what is the relation of their thoughts to mine? If they all think my complete thought, my thought is not explained unless I identify myself with some one of the elements; and then all the reduplications of myself in the other elements are superfluous. We may say that my thoughts are not in the elements at all, but result from their interaction as a function, or resultant, of the whole; but this view is untenable for the following reasons.

Suppose n elements, a, b, c, d , etc., endowed with sundry mystic possibilities, and entering into a highly complex interaction. As a consequence thereof, they may all enter into the same inner state, m , or into a series of states, m, n, o, r , etc., different for each. These inner states, owing to the mysterious double-facedness of the elements, may be considered as of a mental nature. The only possible outcome of the elements' interaction is a modification of their space-relations and the production of these inner states. But each of these states is inseparable from its own subject. There is no way whereby m, n, o, r , etc. may leave their respective subjects, and congregate in the void to form a compound mental state which I call mine. Such a notion would be like that of a series of motions which should break loose from their subjects and compound themselves in the void to form a new motion which should be the motion of nothing. Hence the mental states of the elements must be subjective to the elements themselves, in

which case my mental states are not explained unless I am identified with some one of the elements. But I cannot be identified with any element without thereby removing it from the physical series; for that element is known only as having mental qualities, and is not known as having any physical qualities whatever. Whereas, too, all the others are in a state of constant change, that element is given as fixed and abiding. But if my mental states are not subjective to any one or all of the elements, then outside of *a, b, c, d*, etc. there must be another element, *M*, in such interaction with *a, b, c, d*, etc. that they furnish it with the condition of developing mental states within itself. That *M* is myself.

2. A rational life by its very nature demands a unitary consciousness and a unitary subject. For even admitting that a series of states of consciousness is possible without a subject, we have made no progress toward a rational life. In that case, *a, b, c, d*, etc. are discrete units of feeling, and can never constitute a single consciousness. We repeat the argument already given.

Suppose *a* is a sensation of color, *b* one of sound, *c* is a pain, *d* is an odor, etc. Each is an isolated existence, and is unable to advance beyond itself. A consciousness composed of such elements would be no consciousness at all. These states of consciousness must in some way be turned into a consciousness of states. But this latter consciousness cannot be attributed to any member of the series without violating the primary agreement, which was that each member is only a particular mental state. If *a*, in addition to being a state of consciousness, is conscious of *b, c, d*, etc., and is able to discern their nature and relations, it has all the functions of mind attributed to it. Yet, plainly, if there is to be a consciousness of coexistence or of sequence, of likeness or unlikeness, of unity and plurality, there must be a consciousness which, instead of being

a state of consciousness, is a consciousness of states. But this is not provided for by the coexistence and sequence of the states, but only by some unitary subject, which, standing over against the states, grasps them all in the unity of a single apprehension. Before *a, b, c, d*, etc. can become elements of a rational life, *M* must be given.

3. Again, thought by its very nature must have a single subject. To think is to compare, to distinguish, to unite. But in order to any of these operations, one and the same conscious subject must grasp in the unity of a single act the things compared, distinguished, united. If *M* conceives *a*, and *N* conceives *b*, no relation can be established between *a* and *b*. The same *M* must grasp both *a* and *b* in one consciousness before thought can begin. All reasoning has the implication. Unless the same subject grasp both premises in a single conscious act, there can be no conclusion. The same is true of the consciousness of plurality. The knowledge of the many is possible only through the unity of the one. Hence not merely the consciousness of self as one reveals the unity of self, but much more does consciousness of the many compel the same assumption.

4. The same conclusion is compelled by the facts of memory. What remembers? The spiritualist says, The soul remembers; it abides across the years and the flow of the body, and gathering up its past carries it with it. The materialist must explain the fact. We cannot say that the brain remembers, for the same reason that we cannot say that the brain thinks. The elements remember, then, but how? Those which had the experience are gone, and yet the new-comers know all about it. The original elements, *a, b, c, d*, contributed nothing to *l, m, n, r*, the present elements; and yet *l, m, n, r*, know what happened to *a, b, c, d*. The materialist can only say that memory depends on the form of nervous action, rather than on the identity of the component elements. But in that case we

are left without any subject for the memory, and memory loses all relations to time. An organism made at first hand from the inorganic would have just the same mental life as another of the same structure which might have lived in the past. The former would have the same memories, beliefs, doubts, and expectations as the latter, and would be equally at home in every relation. But in that case memory would only be a present outcome of a special form of nervous action, and would lose all reference to time. And with all this heroic treatment, the facts would still be unmet. Reasoning similar to that already employed would show that memory demands a unitary mental subject. Memory involves a consciousness of temporal relations between certain elements of experience; and this consciousness falls asunder without the unity and identity of the subject.

Materialism in its hylozoistic form succeeds no better than in its vulgar form in explaining the facts of the mental life. There are certain great capital mental facts which cannot be explained as the outcome of any aggregate of physical elements, no matter how mysterious, as long as a special mental subject is denied. Hylozoism merely confuses two realms, and loses the advantages of both. On the one hand, it offers a conception of matter from which physical science has steadily grown away, and which absolutely nothing in experience justifies. On the other hand, it can make no use of the assumed mystic properties in explaining our mental life. They would be mischievous in physics if allowed to influence our conceptions; and they are absolutely worthless in psychology. They must be ruled out, therefore, from both sciences.

Materialism fails to explain the simplest facts of consciousness. On the other hand, spiritualism fits into the facts so well that to spontaneous thought it seems to be a direct utterance of consciousness itself. In addition to the

previous considerations, certain implications of materialism are to be considered; first, in its bearing on action, and second, in its bearing on our trust in knowledge. If these prove absurd or inadmissible, then the theory is doubly untenable.

First, as to the bearing of materialism on action. For materialism the organism is all, and all physical movements are physically determined. These movements are accompanied by thoughts and feelings, but the latter are never causal. They are the mental equivalent, or representative, of the physical process, but all reality and ground of movement are in the physical series. A volition, for example, does not determine action, but is rather only the symbol in consciousness of the physical process which underlies both the symbol and the appropriate action. The symbol counts for nothing in the dynamic sequence of events, but stands apart from the chain of cause and effect as a shadowy attendant, costing and causing nothing.

It is plain that this is the extreme of automatism. The common thought is, that in the movements of history, the foundation of states, the founding of families, the activities of invention, commerce, literature, etc., the human mind has manifested itself as controlling. But on the theory in question, all this vast activity has taken place without any intervention of thought whatever. Thought may have attended the process, though even that becomes doubtful, as the only reason for affirming thought in another person is the conviction that his activities need thought for their explanation; but in any case thought has added nothing. The elements which produced the process knew nothing of it, nor of the thoughts they are supposed to have produced. The presence of the thoughts, instead of being a help, was rather a hindrance, as they represent so much extra work. To take a single illustration, the *Principia* of Newton, and *La Mécanique Céleste* of Laplace, were not the out-

come of any thought whatever, but of a series of physical processes in two organisms, called, for distinction's sake, Newton and Laplace. There was a highly complex series of nervous and muscular processes in happy and profound adjustment to the environment, and the outcome was that propositions and scholia and corollaries were written down in the most astonishing profusion, the whole being illustrated by diagrams, and founded on, or explained in, the most extraordinary series of equations. These are all bound together so as to form a chain of reasoning of the most cogent kind, and to express a series of the profoundest conceptions of physical astronomy. Yet the nerves which did all this knew nothing of the solar system, or of mathematics, or of themselves, or of what they were doing, or of the problem at which they were working, or of the attendant thoughts which they were producing. These thoughts, indeed, which on the common theory are the ground of the entire process, and its only possible explanation, are on the present theory only so much extra work, and hence are an embarrassment rather than a help or guide. This might be called an extreme proposition.

The bearings of materialism on knowledge are next to be considered. The following points are to be noted.

1. Suppose matter can think, it does not follow that it must think rightly. Its thoughts might well be of the nature of fancies or dreams, which, while mental states, nevertheless represent no facts of reality. But, remembering that the physical series is known only through the thought-series, it is plain that materialism must not only provide for a thought-series in general, but for one parallel to the nature of reality. Otherwise knowledge has no validity, and the foundations of materialism vanish.

2. At first sight this seems easy. Since thought is the inner face of the physical process, we may suppose that the inside must correspond to the outside, like the con-

cavity and convexity of a curve. But, to get any help from this view, we must suppose that the thing known is that part of the physical process which lies over against the thought, or which produces it. But this is never the case, for then our thought would be a repetition of the nerve processes, whereas it never reports these directly, but reports rather facts and processes existing or going on outside of the organism entirely, such as the facts of physical nature, the thoughts and feelings of others, etc. Oddly enough, thought never grasps except indirectly the organic processes on which it is assumed to depend, or of which it is said to be the inner face. Whence, then, the parallelism of the thoughts arising within the organism with the system of nature, which is independent of the organism? Either we must abandon knowledge to scepticism, or we must assume that matter by its nature is shut up to right thinking. Thus we come to affirm an opaque harmony between matter and thought.

Some have sought to escape this admission by appealing to natural selection. According to them wrong thinking must lead to collision with reality, and thus to destruction. Right thinking, again, will lead to survival, and by heredity will be transmitted. Hence, in the course of time, natural selection will kill off all false thinking, and will adjust the human mind to reality, yet without assuming any original harmony between thought and thing.

3. This appeal is inconsistent on the part of the materialist for several reasons.

a. It contradicts the asserted powerlessness of thought. If thought attends, without affecting, the organism, its adjustment or misadjustment is equally insignificant for survival. Organisms survive because of their physical adjustments to the system, and not because of mental adjustment. They perish also because of physical misadjustment, not because of mental misadjustment. Hence natural

selection can never come into play to secure mental adjustment. It can only secure physical adjustment, but there is nothing in the idea of such adjustment which implies that thoughts must be parallel to facts.

b. Allowing that natural selection can act, the principle is too narrow in its range to make it of any use as a criterion of thought in general. Plainly it could do nothing except in case of truth related to physical survival, whereas most truth has no such relation. The bulk of theory and speculation has such scanty reference to survival, that some other foundation must be sought; and for the materialist there is none but the assumed harmony between thought and fact in the nature of matter.

c. Again, if the theory be allowed as a determining principle of belief, materialism is ruled out forthwith. For in that case wide-spread and enduring beliefs are the only ones which have any credibility. Beliefs contemporaneous with man, or at least with civilization, catholic beliefs which have developed and established themselves through the ages, have absolute right of way, compared with local, sectarian, upstart beliefs. The former represent the sifting action of many centuries, and have the fullest benediction of natural selection. But natural selection has not dealt hitherto in materialistic beliefs. The proportion of materialists to spiritualists is probably less than that of idiots to persons of sound mind. Hence, as materialists, we must be careful how we appeal to natural selection, for thus far it has gone dead against us.

d. If it be said that the principle has not yet had time to work, it can be shown that its future direction will be the same as in the past. There can be no doubt that materialism is a depressing belief compared with spiritualism. The welfare both of the individual and of society demands sacrifice, self-control, and high endeavor; but these are born only of high conception and lofty hopes.

Materialism furnishes depressing views of man,—of his nature, possibilities, and destiny; and hence, in the long run, under the influence of natural selection, it would have to yield to the more hopeful and inspiring view. Plainly natural selection is a dangerous ally for the materialists.

We are, then, shut up to affirm that matter by its nature is determined to right thoughts. But here the fact appears that most beliefs produced by matter are by hypothesis false. Since matter is the sole source of knowledge and of mental states, it is to blame for all superstitions, theology, philosophy, etc., as well as for the truths of materialism. Matter has founded the spiritual school of philosophy, as well as the materialistic school; indeed, thus far it has favored almost exclusively anti-materialistic beliefs. Now, since for one sound belief matter has produced a myriad unsound and grotesque ones, when shall we believe it? These false beliefs cannot be attributed to bad training, the contagion of example, the influence of superstition, because none of these things seem able to influence matter, and, if they exist, matter itself is responsible for them.

The most natural conclusion under these circumstances would be, that all belief is untrustworthy. That which has such an irresistible tendency towards error, superstition, and falsehood as matter has, must surely be untrustworthy in all its deliverances. But allowing that some truth exists, we must have a standard whereby we may disengage it from this tangle of error. We shall find it hard to discover a standard which will enable us to save knowledge and materialism at the same time.

1. The test of truth in this system is not necessity; for truth and error alike are brought forth with equal necessity by the nervous processes.

2. It is not reason; for reason is no self-centred, self-verifying faculty, but only a shifting of mental states as determined by the mechanics of the nervous system.

3. It is not the majority; for the majority is anti-materialistic.

4. We get no help from assuming it to be found in the normal brain; for then we need a test for the normal brain. It clearly is not the majority brain; for this is anti-materialistic. Inquiry would show that the normal brain is the materialist's brain, and is known to be normal by hypothesis.

5. The standard of truth is not success or practical utility. Materialism is a depressing and paralyzing doctrine.

6. In fact, materialism has no standard of truth. Indeed, the distinction of truth and error cannot exist for it. Since physical processes are all, we might as well talk of true or false bile, or true or false blood, as to speak of true or false ideas. Ideas are the inside of nervous processes, and their coming and going are not determined by their logical truth or falsehood, but by the dynamic relations of the corresponding nervous states. But the ideas of physical strength and weakness are incommensurable with the logical ideas of truth and error. If materialism be true, reason is exploded. Instead of being the highest science and philosophy, it is rather the death of both.

We conclude, then, that materialism is untenable, for two leading reasons. It fails to explain even the simplest mental fact; and its implications are suicidal. To support itself it is forced to affirm qualities in the elements of which physics knows nothing, and when it has constructed its "new definition of matter," it stands absolutely helpless before the simplest fact of our rational life. It is further compelled to turn men into automata, and to affirm that all human affairs and activities are carried on by agents which know nothing of themselves, or of one another, or of the laws according to which they work, or of the effects they produce. Having thus denied all the truths by which men and nations live, materialism is finally compelled to deny truth, and to drag reason itself down into

utter scepticism. Refusing to surrender, it ends the siege by blowing up the citadel, leaving only mental chaos behind it.

We began the discussion of materialism by pointing out that the facts upon which it rests are ambiguous. We may suppose that the organism produces the mental facts, or that it simply conditions the activities of something other than itself. A further study of mental facts, however, convinces us that the former supposition is untenable, and shuts us up to the latter. Hence we view man as we find him, as a dual being, body and soul. By the mind we mean the soul in its intellectual activities. The true man is the soul, but the soul is connected with an organism which conditions the mental life. The body, however, though other than the soul, has still the profoundest significance for the soul in all its activities. It is an instrument for eliciting and guiding the mental development, and for putting the soul into relation with the world of things. This conclusion, moreover, does not rest upon our ignorance of brain physiology, so that advancing knowledge may at any time displace it. It rests rather upon the essential nature of consciousness, and the insight that the unity of consciousness can never result from the interaction of any plurality of things. Whatever progress brain-physiology may make, it will never bring us one step nearer to materialism; and all the discoveries in this realm will have to be interpreted in accordance with this fact.

This view of course does not explain all difficulties, nor answer all questions; for example, it does not explain how body and soul interact, nor the form of their interaction. It does not explain the nature nor the extent of the soul's dependence on the body. It does not tell what physical facts are connected with given mental facts, nor even why there should be any connection. It does not explain the mental effects of opium, or alcohol, or disturbances of the

brain. It does not explain the physical effect of joy, or fear, or depression. So far as these problems can be solved, it must be by experience. Some of them admit of no solution. Experience may reveal that certain facts in the physical series are accompanied by certain facts in the mental series, and conversely; but the ground of their connection will always remain a mystery. Physiology, psychology, and pathology, working together, have the task of finding the actual relations of the two series; but before this can be done, the two series must be separately studied by the methods proper to each. No peering even into the living brain would give the least suspicion of the mental series attending it. Conversely, no inspection of consciousness can reveal the physical facts by which it is conditioned. In this way, by keeping separate things separate, we may hope to learn something of the psychical significance of the body, and of the physical significance of the mind. But if the two series were fully known, and were even found to run parallel throughout their entire length, we should still have simply a coincidence to be accepted, not a connection to be understood.

But while this view does not remove all difficulties, it does relieve some. It enables us to use the language of spontaneous thought without constant inconsistency. It frees us from the need of talking of feelings which belong to no one, and of mental states which are states of nothing. It also removes the necessity of hypostasizing consciousness into a fictitious mental subject in order to escape admitting a real one. It makes it unnecessary to repudiate all the utterances of our spontaneous consciousness. Finally, it saves us from the somewhat tedious superficialities and drolleries of materialism,—a service by no means to be undervalued. Such are its negative advantages. Positively, it provides for the unity and continuity of the mental life; and it agrees so well with our

spontaneous consciousness, that it almost seems like an immediate deliverance of the same. Finally, by displacing the manikin conception of humanity, it provides for some consistent recognition of the ideals and practical principles by which both men and nations live. The dreary folly of laboriously building up speculative theories, which every hour we practically deny, may seem very brilliant for a while, but it grows tiresome at last.

CHAPTER II.

SENSATION.

By sensation we mean that peculiar affection of the sensibility which is referred to some extra-mental cause. In this respect, sensation differs from emotion; for the latter, while a state of the sensibility, arises from the nature of our mental states themselves, and is not referred directly to any external cause. There is no need to inquire whether this objective reference be objectively valid; for in any case it is actually made, and serves as a mark of distinction.

In our mature life, sensations have a double reference. (1.) They are referred to the self as their subject, and (2.) they are referred to extra-mental objects, either as their qualities or as caused by them. In the latter reference, sensation passes into perception. Thus the sensation of light seems not so much a subjective state as the perception of an objective quality. Our present study deals with sensations only as subjective states.

Of the conditions of sensation nothing can be said *apriori*. A certain nervous change is attended with a sensation of light, another with that of sound, another with pain, etc. But why they should be attended with certain sensations and not with others, no one knows. Or why they should be attended with sensation at all, while others are not, is equally unknown. Or why sensation should result only from movements in the organism, and not from extra-organic movements, is likewise mysterious. The doctrine of the clairvoyants, who claim to see by some direct gaze of the soul, and without mediation of

the organs of sense, is in itself no more mysterious than the actual order of experience. *Apriori*, one order is as possible as another. The actual order must be learned from experience.

The actual conditions of sensation are found in some form of nervous change. The causes of this change are often external to the organism; often they are within the organism, and sometimes they are in the mind itself. Corresponding thereto, we have respectively the extra-organic or objective sensations, the organic, and the subjective sensations.

Supposing the end of a nerve disturbed in any way, this disturbance must be propagated to the brain. What happens in the nerve is purely a matter of speculation. A thoughtless form of speech often regards the nerves as carrying the sensation to the mind, but a moment's reflection reveals the absurdity. Sensations are not things which can be handed along from one atom to another, as a letter is passed from hand to hand, and hence, if the nerves were full of sensations, they would not explain mine. In accordance with our general views of matter, we regard the nerves as a molecular complex; and hence we must hold that molecular movement is the essential phenomenon of nervous action. At all events, it is found that something takes place in the nerve, and that this is propagated through the nerve at a rate of from one hundred to three hundred feet a second. It is further found, that no sensation results if the nerve-line be not continued unbroken to the central organ. When this is the case, and the nervous affection is propagated to the brain, there results a fact of a new order, a conscious sensation. This is purely a mental state. It is not contributed to the mind by the nerves; and the nerves themselves do not feel. Sensation is a mental reaction against nervous action.

This fact is inexplicable on any theory. No materialist

would claim that any analysis of ether- or air-waves, or of a vibrating nerve, would ever lead us to the point where we should see a sensation emerging as its necessary consequence. He would be compelled to accept the fact as a mystery. On the other hand, no spiritualist would claim to know why a given form of nervous action should be attended by one form, and intensity, of sensation, rather than another. There is nothing in the cause to suggest the effect; and, conversely, nothing in the effect to suggest the cause. Just as no reflection on a vibrating nerve gives sensation as its effect, so no reflection on the sensation reveals a vibrating nerve as its cause. All but the circle-squaring type of minds have abandoned the attempt to tell how, or why, nervous action is followed by sensation; or why one form of nervous action is followed by one form of sensation, and another form by another. All study in this direction is lost, and indicates utter inability to deal with the problem in general. The two orders are connected in fact; but there is nothing difficult in the notion that the mental series should be connected with a totally different physical series, either in other animals or in other spheres of being.

Thus far we have considered the conditions of sensation only in the most general way. In their further study we begin with the nervous excitant or stimulus.

This is different for different nerves. Speaking broadly, we may say that the normal excitant for the optic nerve is light; for the ear, sound; for the touch, contact and a certain measure of resistance; for the sense of temperature, heat; and for the senses of taste and smell, certain chemical changes in the corresponding nerves. In most of these cases, however, the action of the excitant is more complex than was formerly thought. The structure of the eye is such as to allow only ether-vibration to reach the optic nerve, but the simple falling of light upon the nerve does

not produce the sensation of light. Both the optic nerves and fibres are insensible to light, as appears from the so-called blind spot and the Purkinje figures. Behind the optic fibres is the region of the rods and cones, and the visual purple; and here it is that the sensibility to light is found. It has been suggested that photo-chemical changes in this region are the true stimuli. In the case of the ear, sound is the external stimulus; but the auditory mechanism is extremely complex, and the functions of its several parts are unknown. How auditory impulses are generated in the organ of Corti is as mysterious, as how visual impulses are generated in the region of the rods and cones of the eye. Sensations of temperature are due to changes of heat; but the heat, instead of acting directly upon the nerve, may produce its effect by various modifications of the surrounding physical structure. The skin and tongue, likewise, have curious structures, whose function may be to give the external excitant a form adapted to the nerve. It has been supposed that sensations of touch are due to one set of terminal organs in the skin, and sensations of temperature to another; but how the different stimuli act upon these organs is unknown. Smell, too, is due to contact of odorous particles with the olfactory membrane, but it seems necessary that the substance be in a gaseous form. When the nostril is filled with rose-water, no odor is perceived; though this might well be due to a temporary paralysis of the nerve, as filling the nose with water suffices to suspend smell for a time. There remains, therefore, a great deal that is mysterious in the action of the external stimulus upon the nerves. In the case of the organic sensations, nothing is known of the form and mode of action of the stimulus. A certain state of the muscles, or viscera, or the nerves themselves, becomes a ground of sensation, but why, or how, is unknown.

For objective sensations the excitant is generally peculiar for each class; for light, ether-waves; for sound, air-waves; for taste, chemical action, etc. But it appears that any agent which affects the special nerves may produce the appropriate sensations. Thus a blow on the head, or pressure of the eyeball, may produce the sensation of light; a blow also may produce a ringing in the ears; while electricity serves to excite all the senses. From such facts the conclusion has been drawn that a given class of sensations may be produced by various stimuli. But the facts are not absolutely unambiguous. We do not know what constitutes an adequate stimulus in any case; and we do not know what modifications the external stimulus undergoes before the final effect is produced. It may be, then, that a given class of sensations has only one adequate stimulus, and that, in the cases referred to, this adequate stimulus is produced in an unwonted manner. The pressure of the eyeball might cause a sensation of light, by setting the ether in the eye in vibration. Electricity might work equally indirectly; producing in the nerves those changes which are the proximate stimuli of their appropriate functions. It is at least conceivable that given sensory impulses are aroused only by stimuli of a special character, and that the action of irregular stimuli consists in producing the adequate stimulus in an extraordinary manner. The point admits of no positive decision.

Sensations differ in quality to such a degree as to fall into completely incommensurable classes. The sensations of sound, light, pressure, odor, warmth, etc., have nothing whatever in common, except that they are all affections of the sensibility. There is no possibility of regarding them as multiples of a common unit. But for the differences of effects there must be some difference in the cause. We may seek for this difference, (1.) in the external stimuli,

(2.) in some specific energy of the nerves, and (3.) in the form of nervous action.

1. The external stimulus falls into different classes, as air- and ether-waves, mechanical pressure, and chemical action; but this difference of stimulus becomes significant only as it produces difference of nervous action. It is, however, far from plain that the peculiarities of the stimulus pass over into the nervous action, so as to found the absolute difference of sensations; e. g., the enormous difference of velocity between waves of light and those of sound disappears from the wave of molecular movement transmitted along the nerves.

2. The most natural supposition would be, that each nerve has some specific peculiarity, whereby it becomes the sufficient ground of the corresponding sensation. If such a difference were admitted, a reason would be given for the difference of sensations, and for the fact that a given nerve seems to respond to all stimuli only with its appropriate sensation. Of course, the simple fact that a certain nerve is the auditory nerve would contain no explanation of auditory sensations; there must be some difference of structure to found its specific qualities. For a long time this view was held, under the name of the specific energy of the nerves. However, anatomy reveals no difference of nerve structure on which to base the difference of function, and hence the doctrine has been largely abandoned, or at least greatly limited. The essential elements of all nerves, motory and sensory alike, seem to be the same; and now it is sought to account for the difference of function by difference of connection. In that case, the nerves would be like the wires of an electric battery, which do various kinds of work according to their connections at either end, and not according to any specific difference of structure in the wires themselves. Connected with a telephone, they send out one set of signals; con-

nected with a Morse instrument, they send quite another. Again, the effect of a current will vary also with the connections at the other end, producing ticking, articulations, incandescence, explosion, etc., according to the circumstances.

3. On this view, we must have the ground of the peculiar action of special nerves at one end or the other, or at both. In the case of the special senses we find a series of peculiar mechanisms for the reception and working over of external stimuli, and these seem fitted to give the action a peculiar form, which might serve as the ground of the sensational difference. Opposed to this is the fact that the optic nerve, if affected anywhere along its length, responds with a sensation of light. This would point to some peculiarity either of the nerve itself, or of its terminal structure or connection. The former view having been abandoned, we have only the latter left. And anatomy does reveal many peculiar structures in the brain; and we might suppose that the nervous action, whatever its form, may receive here a new and final transformation, which first fits it to be the ground of sensation. We should in that case maintain the doctrine of a specific energy, not, indeed, of the nervous fibres, but of the central organ. But this view also has its difficulties. (1.) It ought to be possible to furnish persons born blind or deaf the sensations of light or sound, provided the trouble is due to some imperfection of the external organs; but this does not seem to be the case. (2.) The view would demand an absolute constancy of function which does not exist. Many facts are reported which point to a vicarious action of the nerves, so that a given nervous tract can take upon itself the labors of another area upon occasion.

On all these accounts, the tendency in physiology is toward the following view. The sensory nerves (omitting all reference to the motor nerves) have primarily no differ-

ence of function; and the ground of their actual difference lies originally in their peripheral endings and the stimuli to which they give access to the nerves. These endings, however, give the nervous action a certain form; and, as they condition nearly all the stimuli which reach the nerves, a given nerve is confined almost exclusively to one form of nervous action. Hence the nerve gradually adjusts itself to that form, and when disturbed at any point, or by any cause, it tends to take on that form, just as the wood of a violin tends to adjust itself to harmonious vibrations, and becomes more effective thereby. In this way a kind of acquired specific energy would arise, whereby, within certain limits, a given nerve would remain faithful to its acquired modes of action. In this way we should explain the fact that sensations of light and sound remain possible long after the destruction of the external organs. But while the tendency is toward this view, it cannot be regarded as universally accepted. It is still held by many, that certain fibres in the ear are sensitive only to certain tones, like the strings of an instrument, and that different sets of visual fibres correspond to the three colors green, red, and violet. The other colors are supposed to arise from the varying activities of these fibres. Others agree in affirming differences of function in the optical fibres, but differ in their conception of the basal colors. It is not always easy, however, to see how these views serve the purpose of their invention. The facts of color-blindness would find an easy explanation in them; but it is not clear how blue or yellow is to arise from a simultaneous excitation of the fibres which produce green, red, and violet.

It is plain from the foregoing, that concerning the particular form of the nervous action nothing can be known. To what extent the original vibration of the ether is modified in the retina, and in its passage through the central organs of vision, is beyond all suspicion. Our current physical

science, however, leaves us no choice but to regard the action as some form of movement; and as vibrations are always fashionable, we may view it as a species of vibration. We might in that case assume that the difference of sensations depends upon the difference in these vibrations. They might be conceived as longitudinal, or transverse, or as moving in closed orbits and with different velocities. Leaving such fancies to themselves, we may point out that simple movements of matter, of whatever sort, can never be a sufficient ground of sensation. Such movements are simply a passage of one or more elements from one point to another; and there is no way of connecting them with mental changes except by supposing that there is a deeper dynamic relation which is the real ground of the sensation. Indeed, metaphysics convinces us that, even in the physical world, the spatial system of changes among things is really only the visible translation of a metaphysical system of interaction in things. Things do not act on one another because they move, but they move because they act on one another. It is not the fact that the nerve molecules vibrate which fits them to the ground of sensation, but the fact that they are in dynamic relations with the soul. The sensations, therefore, are not to be referred to the vibrations, but rather to that internal energy of which the vibration is the spatial expression. But since the relation between the inner energy and the spatial expression is regarded as constant, we may take the latter as the equivalent of the former, and continue to speak of vibrations as the ground of sensation.

This conception of nervous action implies that all antecedents of sensation can be conceived as phases of a common process, so that by varying the common factors we might pass through the entire series. By modifying velocity and direction any form of vibration might be made to pass into any other whatever. In that case, all sensory impulses might be arranged on a scale like the colors of

the spectrum or the notes of music. But such an order would lead us to expect a corresponding community in the members of the sensational series and the possibility of arranging our sensations on a common scale. Such a fact, however, does not exist. It is not always easy to find a common element in the sensations of the same nerve, e. g. the optic nerve; and it is impossible to find any common feature in the data of the different senses, or any possibility of passing from one to the other by intermediate gradations. Such a possibility may exist on the physical side, but it does not exist on the mental side. In a later paragraph we shall refer to the attempt to reduce our sensations to a common sensational unit.

Our complete ignorance of what takes place in the nerves is no psychological loss. For practical purposes, we should be no wiser if we had the profoundest insight into the action of the external stimulus; and psychologically, also, we should be no better off if we knew all about the form of the nervous action in any special experience, and the place of its location. The ability to locate and describe every sensory and motor process would only give us an exact knowledge of the physical antecedents of sensation, but would bring us no nearer to comprehending how they produce sensations, or how sensations are worked over after they are produced, or even what the sensations are. Indeed, the facts with which we have been dealing are not properly psychological facts at all. The idealist, of course, would deny that they are facts of any kind.

Another question of considerable interest, but of about as little psychological significance, concerns the relation of the intensity of the sensation to that of the stimulus.

Sensations differ in quality, and thereby are distinguished into different classes. Sensations of the same class differ in intensity, and the commonest experiences show that this varies with the stimulus. In seeking for the relation be-

tween the intensity of sensation and nervous action, it is, of course, impossible to observe the nervous action which immediately precedes the sensation, and it only remains to study the relation between sensation and the external stimulus. Several difficulties may be mentioned in advance.

1. The distinction of intensity itself is generally a qualitative as well as a quantitative one, and in most cases it is due to an unwillingness to multiply classes beyond necessity. In fact, the sensations of the same class, which, out of respect for established classification, we regard as differing only in intensity, differ also in quality. Hence, a varying intensity of the stimulus often produces, not a more intense sensation, but a different one. Increase of pressure, heat, light, or intensity of flavor or odor results in sensations of different qualitative nature. Cold is not a faint sensation of warmth; and a burn is not an intensified glow of comfort. A given flavor diluted may have a pleasing taste; concentrated, it may be utterly disgusting. Yet it would hardly do to call the disgust intensified pleasure because the stimuli in the two cases differ only in intensity. It is only in the case of sounds that we can distinguish with any certainty a quality (the pitch) which remains the same through all variations of intensity.

2. The effect never depends entirely upon the external stimulus. The state of the nervous system, the amount of expectation and attention, the continuance of effects in the nerves after the stimulus has been removed, are all to be taken into account. An exhausted nerve responds with diminishing vigor. An excited nerve, especially the optic nerve, continues to produce sensation after the stimulus is removed. After-images, the vision of complementary colors, and the temporary blindness after looking at the sun, are examples. Sensations of temperature, on the other hand, depend, within certain limits, altogether on the direction of

change ; so that the same absolute temperature may be felt as either hot or cold, according to circumstances.

These difficulties would be fatal, if the aim were to find a fixed connection between a given intensity of stimulus and a given intensity of sensation. Discounting such high claims, we may glance at what has been done in this field.

It is easy to arrange a series of stimuli of a given class on a numerical scale, so that their relative intensity can be seen or calculated. It is equally easy to observe the resulting sensations, but it is not possible to arrange their intensities on a numerical scale. We have, indeed, a fine sense for more or less, but we cannot tell how much more or less. We find no sensation of which we can say that it is just twice as strong as another. If this were possible, our task would be easy. We should only need to compare the numerical scale of the resulting sensations in order to get the law of their connection.

But since this is impossible, we must adopt some indirect method. E. g., we may take some stimulus of measured intensity, and increase or decrease it gradually, and note the point at which an increase or decrease of sensation is perceptible. The process may be repeated in either direction, and thus we may get the following scale :

$$\begin{array}{ccccccccccccccc} S, & S_1, & S_2, & S_3, & S_4, & S_5, & S_6, & & S_n; \\ a, & a_1, & a_2, & a_3, & a_4, & a_5, & a_6, & & a_n; \end{array}$$

where S , etc. represent the just distinguishable sensations, and a , etc. represent the stimuli. The series a, a_1 , etc. may be a series of weights ; and S, S_1 , etc. may be a series of just distinguishable sensations of weight. We should find that the same increase of stimulus which produces a feeling of change in the lower members of the series does not suffice to produce such feeling in the higher members ; e. g., we can easily distinguish between one and two ounces, but not between ten pounds and ten pounds

and one ounce. Or we can see at once that a two-inch line is longer than a one inch line, but not that a line fifty-one inches long is longer than another of fifty inches. In order to produce a sense of difference, the increase of stimulus must bear some general proportion to the stimulus itself. E. H. Weber, who first broke ground in this matter, declared the law to be, that the increase of the stimulus must be a fixed proportion of the stimulus; e. g., if, holding a pound weight, I must add an ounce in order to perceive a difference, then, holding a two-pound weight, I must add two ounces before any difference is perceived. In like manner, n pounds must be increased by n ounces to produce a sense of difference. This ratio is different for the different senses, being about 3:4 for the ear and feelings of pressure, 15:16 for muscular sensations, and 100:101 for the eye. We should also find that, below a certain point, there would be no sensation. This point is called the "threshold," and determines the absolute sensibility of the nerve in question. The constant fraction which must be added to produce a feeling of difference determines the discriminative sensibility.

The formula we have given is known as Weber's law, and the method described was employed by Weber himself, and is known as the method of smallest perceptible differences. Besides this, various other methods are employed for the same purpose of establishing a relation between the intensity of the sensation and the stimulus, but they add nothing to the result. The law itself is valid only within narrow limits. It does not hold at all for some classes of sensations, and is invalid for others whenever the stimulus is very large or very small.

This empirical law has been transformed by Fechner, so as to express the numerical relation between the variation of the stimulus and that of the sensation. Recurring to the two series,

$$\begin{array}{ccccccccccc} S, & S_1, & S_2, & S_3, & S_4, & . & . & . & . & . & S_n, \\ a, & a_1, & a_2, & a_3, & a_4, & . & . & . & . & . & a_n, \end{array}$$

the latter series, by Weber's law, increases in geometrical progression. If now we assume that the smallest perceptible difference, $S_n - S_{n-1}$, is a constant quantity wherever it occurs in the series, then the series S, S_1 , etc. increases in arithmetical progression. In that case, S, S_1 , etc. would not increase as a, a_1, a_2 , etc., but as the logarithm of the respective terms, and the intensity of the sensation would vary as the logarithm of the stimulus. This is Fechner's law. It has several short-comings:—

1. It assumes the absolute validity of Weber's law, whereas that is only an empirical rule with many exceptions.

2. It assumes the constancy of the least perceptible difference for all points of the scale, which is not only arbitrary, but doubtful.

3. It assumes that intensity is the only standard of distinction among the resulting sensations. But we have seen that different intensities of stimulus are often attended by qualitative differences of sensation; and these might well be the ground of distinction. The possibility at least deserves attention.

4. Fechner's formula taken absolutely leads to psychological nonsense. Mathematically expressed, it would read,

$$S = K, \log E,$$

where K is a constant and E is the stimulus. Hence for $E = 1$ we should have

$$S = K, \log E = 0;$$

and for $E < 1$ we should have $S =$ a minus quantity; and finally, for $E = 0$ we should have $S = -\infty$.

That is, for the unit of stimulus we should have no sen-

sation; for anything less than this we should have negative sensations; and finally, for zero stimulus we should have an infinite negative sensation. That is, in the name of a mathematical formula, psychology is loaded down with meaningless absurdity.

Since the terms compared in the previous estimates are the external stimulus and the subjective perception of difference, which are at least one remove of mediated action from each other, Weber's law admits of a threefold interpretation. We may regard it as expressing the relation of the stimulus to the nervous action, or of the nervous action to mental change, or of the nervous action to our power of discrimination. These have been called respectively the physiological, the psychophysical, and the psychological interpretations of Weber's law. The second view differs from the third in assuming a continuous order of mental change, which corresponds with the continuity of the physical change, but which may or may not be conscious. On this view the law expresses the relation of the nervous action to this psychical reaction. Consciousness is something which results from this psychical activity when it reaches a certain degree of intensity, called the "threshold."

The physiological view is exposed to the objection, that it assumes a continuity of physical causation without assignable continuity of physical effect. The cause increases continuously, while the effect increases discontinuously. To explain this, we must assume some imaginary complexity of nervous structure, or some imaginary laws of nervous action. This view makes Weber's law purely physiological, and without any psychological significance. It assumes, also, that the nervous action and the mental effect vary in the same proportion.

The psychophysical explanation has been objected to by the physiologists, as not accounting for the varying degrees of sensibility to difference in the different senses. But this

objection assumes, (1.) that the fact is clearer on the physiological theory, which is a mistake; and (2.) that there is some common factor in the nervous process which is to be transmuted into a mental process. But if we have to admit that certain nerve processes are attended by certain sensations, and certain others by other sensations, there is no difficulty in admitting that more energy is required to produce certain kinds of mental change than to produce certain others. In truth, neither this theory nor the preceding one contains any account of the discontinuity of the sensational series. Even if we admit Fechner's law, we are unable to deduce the discontinuity in question; for then, for each variation of the stimulus, there ought to be some variation of the sensation. The defenders of each view have generally sought to maintain Fechner's formula rather than to deduce Weber's facts.

The psychological theory is nearer the facts than either of the others. In Weber's law, the subjective factor is really our power of discrimination; and the law does not express a relation between the stimulus and the sensation considered as an isolated mental state or a phase of psychological activity, but between the stimulus and our power to perceive differences. However the mental change may vary in relation to the stimulus, this change must reach a certain degree to become perceptible. This degree, moreover, is variable. Attention and practice greatly increase our power of appreciating differences; e. g., with the blind, touch almost takes on the character of a new sense. This is not a very striking or valuable result; but it is the gist of the matter. A somewhat blind enthusiasm has magnified Fechner's formula into undue importance. So far as true, it represents simply an interesting fact, but no significant principle. As far as one can judge from the confused utterances on the subject, there seems to be a fancy that the discovery of a measurable intensity and duration

in sensation in some way proves the mind to be a physical product.¹

The duration of the sensation in general is about the same as that of the stimulus. This is especially the case with hearing and touch. In some cases, however, the sensation continues to some extent after the external stimulus is removed. This is best explained by supposing the nervous action to continue beyond the excitement, and only gradually to die away. This may be due either to changes in the surrounding physical structure, as in case of heat, or to direct continuance in the nerves themselves, as in the optic nerve. It is in the eye that the phenomena are especially noticeable, and often annoying. After-images are examples. When we look at some bright object and then close the eyes, an image often persists. These are called positive after-images, and are best seen after momentary action of the stimulus. When a white object on a black ground is intently gazed at, and the eyes are then turned to a white ground, the object will appear as a gray image on the white ground. A black object on a white ground has a white negative image on a gray ground. The other colors have negative images in their complementary colors. These facts have been explained as owing to exhaustion of the retinal area upon which the original image fell, so that the subsequent stimulation finds a part of the area less sensitive than the surrounding parts, and thus the after-image arises. If we suppose the area which received the image of the white spot to be exhausted, then, on turning the eye to a white ground, that area will be less sensitive to the light than the other parts, and thus will give rise to a negative image. This explanation, however, does not

¹ On this subject see Fechner's works, especially his *Revision der Hauptpunkte der Psychophysik*; Delbœuf's *Elements de la Psychophysique*; Wundt's *Physiologische Psychologie*; and G. E. Müller's *Zur Grundlegung der Psychophysik*.

clearly apply to those after-images which arise when there is no second stimulation. The eyes may be kept shut, and all light excluded, and after-images may still result. The white spot appears as a black spot, and conversely the black spot appears light. The explanation of these facts is purely hypothetical. Finally, the optic nerve seems never entirely inactive, but always produces some sensations of light, varying greatly, however, with the state of the eye, and with the constitution of the person.

It is this fact, that the nerves as a rule quickly return to their equilibrium of indifference, which fits them to be servants of intelligence. Otherwise all consecutive excitations would run together, and all rapid action of the senses would be impossible because of the resulting confusion.

Thus far we have spoken only of the stimulus and the nervous action. We have seen that the latter subject is wrapped in mystery, and is likely to remain so. At the same time, we have seen that this is no psychological loss, as the outcome of even a perfect knowledge of the subject would give us no hint of the psychical nature of sensations, but only of their physical conditions. And since, from a causal standpoint, their connection is purely arbitrary, we have no ground for thinking that the same order might not be produced in entirely different ways, or for thinking that our sensations exhaust the possibilities of the case. The system of sensations is not a closed one, and its members have no internal unity. It is, therefore, entirely possible that differently organized beings have orders of sensation of which we have no suspicion, and are affected by agencies to which our nerves make no response. Of course, this possibility does not assure the fact. We pass now to consider the sensations themselves.

Simple sensations are said to be distinguished in quality, intensity, and tone. Of course, they may be distinguished

in time, duration, localization, etc.; but these are qualities which do not belong to them in themselves, but only in their relations. The primal distinction is that of quality. The other two are more doubtful. It seems probable that they arise from a certain regard for logical convenience, rather than from a study of the sensations themselves. The mind has an obvious interest in reducing the number of classes to a minimum, and thus a great many qualitative differences are overlooked. Nevertheless, they must be taken into account in some way, and then some new distinction must be invented whereby the classification may be retained and the differences be recognized. In this way the notions of intensity and tone arise. We have seen that the so-called differences of intensity are generally qualitative, and the same may be said for differences of tone. Sensations with different tone are qualitatively different sensations, but for convenience' sake they are identified in quality and distinguished in tone. This method is further supposed by the reference of our sensations to things as their qualities. In this way the sensations take on the fixedness of things, and all distinction must be put either in the intensity or in the tone. Previous to classification and objective reference, however, all differences must be regarded as qualitative. Thereafter the distinctions made must be recognized. It seems probable that the classification of sensations depends largely upon their localization, so that they are grouped rather by the community of organ than by similarity of content. A consciousness furnished with our sensational experience, but without knowledge of the organs of sense would hardly group its sensations as we do.

That which we have spoken of as tone is more commonly called feeling; and some, as Hamilton, have called it sensation. This curious uncertainty arises in this way. Some of our sensations are objectified as qualities of things, while

others are recognized simply as states of our sensibility, and have no objective reference. Thus the former come to be distinguished from the latter as percepts from sensations. Again, a certain amount of organic feeling attends the action of the external senses, and in the case of taste and smell it is so high as almost to obscure the perceptive element. Hence Hamilton laid down the law that sensation and perception vary inversely, where sensation can only mean the organic feeling attending the action of the senses. But as we have used sensation to designate any of the effects produced in us by the action of the outer world, we cannot adopt the Hamiltonian terminology. Nor do we propose to use the term tone. We are here at a parting of the ways in the mental life. Our sensations as a whole have a double reference. They may present an object to the intellect, and they may be simply an experience in the sensibility. They may be projected outward as qualities of things, and they may remain as simply states of feeling. After the projection takes place, our sensations seem to be really perceptions, and to have no sensational element. This seems to be found only in the other set. Here is the beginning of the distinction between knowing and feeling, or between the intellect and the sensibility. Again, in the case of the projected sensations we find an accompanying element of sensibility, which varies greatly with circumstances, and which is well described as the tone of the sensation. This tone is an addition to the mental object as presented to the intellect; it is a coloring given to it by the sensibility. Sensations may be roughly divided into percepts and physical feelings; but neither of these classes exists in absolute purity.

Out of the facts just mentioned springs the distinction of the intellectual and the organic sensations. The former are so called because they appear to reveal to us the world of things, while the latter only reveal to us something

about ourselves and our bodies. Some scruples might be raised if this distinction were made absolute; but it is sufficiently correct for practical purposes.

The intellectual sensations are those commonly ascribed to the five senses, — smell, taste, touch, hearing, and vision. The last three are called pre-eminently the intellectual senses, because they contribute immeasurably more knowledge than taste or smell.

The organic sensations have largely the teleological function of giving warning of organic needs or dangers. Such especially are hunger and thirst, and their opposites; and also the feelings of strain and weariness. The sensations connected with motion are especially significant for the regulation of motion and the position of the body. These are often of a marvellous degree of fineness, and any disturbance of them is sure to be attended with clumsy or uncertain movements. The digestive system also may be the seat of not over-pleasant sensations. The nervous system too may be variously disturbed, and give rise to various sensations, marked or obscure. From the total action of the organic factors results a general tone of feeling, as of vigor or languor, comfort or discomfort, etc. The general character of the organic sensations is, that they are directly related to action, either as attendants, or as results, or as stimuli, and are only indirectly related to knowledge.

The proper source of the sensations connected with motion has been much discussed. Three classes are given, — (1.) sensations of the skin, (2.) sensations of the muscles, and (3.) sensations of the brain due to innervation. In sensations of the third class we are supposed especially to have a feeling of effort, and a sense of effort has been added to the list of senses on this account. Naturally there have been attempts to recognize only one source. Some have sought to explain the muscular sen-

sations as really due to the changes in the skin produced by expansion and contraction of the muscles. The reality of a special muscular sense, however, may be regarded as established. The third class of sensations has been questioned as being only echoes of the muscular sense. The sense of effort may be a complex result of peripheral changes, and not something arising directly in the brain from the impulse of the will. In favor of the central sense is the fact that a paralytic may be conscious of effort when no movement results; although it is suggested in reply that the effect may be due to movement in other parts of the organism. It is further urged, that the discrimination of weight depends on our sense of effort; but, on the other hand, this discrimination takes place, though not so accurately, when muscular contraction is artificially produced. The sense of effort is a somewhat doubtful hypothesis.

Organic sensations are often called subjective, particularly those which arise from the mental state. Sometimes, too, sensations which normally have an extra-organic cause are produced by abnormal states of the organism. Such are the sights and sounds which often accompany brain disease, or the delirium of fever, etc. Such, too, is the influence of the mind upon the body, that certain sights or expectations, or the concentration of attention upon the sense in question, often serve to produce more or less marked sensations. The sight of a disgusting object may serve to produce nausea; the belief that we are seriously injured may produce faintness or distress; the expectation of being tickled may serve to produce unpleasant feeling, etc. It is often impossible to fix the attention upon any organ without observing a modification of its action. We shudder at the thought of a cut or bruise, and are nauseated at the mention of sundry things. This fact has been made the basis of an explanation of various phenomena of

mesmerism and spiritualism. Expectation and the power of a dominant idea are assumed to account for the phenomena.

The local character of sensations remains to be noticed. In the developed mental life sensations are referred to some part of the body; and this can take place only through some qualitative peculiarity of the sensations themselves. If all sensations were qualitatively alike, there would be no reason for referring them to different parts of the organism. This difference founds the local character of the sensations, and has been called their local sign. It is that through which their localization takes place, and without which it would be impossible. At the same time, it is often impossible to separate this element in consciousness; it is known only by its results.

In speaking of the factors to be considered we have recognized only three,—(1.) the stimulus, (2.) the nervous action, and (3.) the conscious sensation. The suggestion, however, is made, that there may be something intermediate between the nervous action and the conscious sensation. This has been variously named, as unconscious sensation, latent mental modification, sub-conscious mental state, etc. The first of these is a psychological contradiction, and is unconditionally to be rejected. The doctrine at this point is intelligible only as a claim that the immediate effect of the nervous action is to produce a series of affections of the soul, which are not revealed in consciousness, but which may rise into consciousness, or which may be the stimulus to the soul to react with proper sensation. We must be careful, however, not to give these affections any of the names which imply consciousness. They can only be regarded as metaphysical states of the soul, and as having no more mental character than the metaphysical states of energy in an atom. There may well be unconscious activities of the soul in connection with the body.

If we ascribe to the soul any formative and directive influence upon the body, we must admit that this is below consciousness. With respect to it the soul is simply a thing with power, not a conscious self. Our present inquiry concerns simply the question whether we need assume such unconscious states in the interaction which mediates sensation and perception.

Various arguments are offered in favor of the view:—

1. It is said to mediate the passage from the simplicity and community of nervous action, considered as some mode of motion, to the complete unlikeness of different classes of sensations. We might suppose that the primary effect in the soul consists in some simple form of affection corresponding to the simplicity of the nerve processes, and that sensations of different classes arise from varying combinations of this basal unit.

This consideration has no value. The qualitative differences of sensation are not explained by such a common unit. That which has led many to fancy that such a unit can be found is the fact that many of our sensations along with their qualitative content have sundry attendants of feeling, and these may show a certain likeness, yet without in any way showing a common factor in their peculiar content. In any case, such simple, unconscious affections in the soul seem no better adapted to explain the conscious, qualitatively different sensations, than the nervous action itself. Somewhere the transition must be made from unconsciousness to consciousness, and from likeness to unlikeness; we should not delude ourselves with intermediaries, which only seem to help, and really hinder.

2. A better argument lies in the following facts. The physical antecedents of sensation are often present, yet no sensation results. In the abstraction of study we lose sight of the external world. In the heat of passion or excitement we may receive great physical injury without knowing

it. We must, however, suppose that the physical causes produced their proper mental effects; and, as these did not rise into consciousness, they must have remained below it as a latent mental state.

Most of the facts of this kind are exaggerated. Consciousness has many grades of intensity; and no fact is brought out into clear consciousness without a certain amount of attention, and a focusing of our intellect upon it. In this respect consciousness is like the eye; there is one spot of clear vision. The most of these so-called unconscious experiences lie in this field of indefinite, or undiscriminated, consciousness, rather than in a sub-conscious realm. At the time, they have no interest for us, and are neglected in proportion to their indifference.

Allowing, however, that no mental effect whatever can be observed, the conclusion rests on an assumption which may be questioned. In theoretical mechanics we assume that every force will have its full effect, as well in a crowd as when acting alone. If two forces, *a* and *b*, act upon an element, *c*, successively or together, they will bring the element to the same point. How far this assumption is valid for all interaction is beyond knowledge. Yet the argument in the present case rests on the assumption that an external stimulus must produce its full nervous effect, no matter what the condition of the nervous system, and that the nervous action, in turn, must produce its full mental effect, no matter what the state of mind. The first part of this assumption we know to be false in many cases. The same stimulus produces quite different results, according to the state of the nervous system. It is, therefore, quite conceivable that nerves reverberating with passion or emotion should not respond to a physical hurt with their accustomed reaction.

The second part of the assumption is equally doubtful. The only results of nervous action upon the mind which

we can estimate are the conscious results; and these we know do vary with the state of mind, the interest, the pre-occupation, the amount of attention, etc. But since we must allow this fact somewhere along the line of mental effects, we may as well put it at the entrance to the mind, and say that the effect of nervous action is conditioned by the mental state. This is no more difficult a conception than the opposite, that the effect of nervous action is an invariable series of latent states, but that the effect of these states is conditioned by the conscious state. If attention is able to intensify a sensational state, intense preoccupation might be able to prevent it altogether. The claim to remember events of which we were unconscious at the time, which is often made in connection with events immediately preceding, is either a case of the exaggeration mentioned above, or is based on the echo of the nerve process which has not yet died away.

3. The existence of sub-conscious states is further argued from facts like the following:—

a. Any antecedent of sensation can be divided into an indefinite number of elements, either of extension or of intensity; and the antecedent itself must be regarded as the sum of these components. Hence, each component must produce a certain effect, as otherwise the whole would have no effect. But we are not conscious of these component effects, but only of their resultant. Hence, the conscious state must be viewed as the outcome of other states below consciousness.

b. Again, a single beat regularly produced appears as a succession of beats as long as the rate of recurrence falls below a certain standard. When the recurrence is more frequent, that which was perceived as a series of beats is heard as a fine-grained musical note, in which all hint of the components disappear; and yet they are really there, but below consciousness.

c. Again, white light is composed of several primary colors, each of which must have its full effect in consciousness, but all of which are fused into the one sensation of white light.

We consider these arguments in order.

1. Argument *a* rests on the assumption that each minutest intensity of action in a sensory nerve must have a correspondingly minute mental effect. This is a questionable transference of a physical doctrine to an entirely different realm, and one which a consideration of the facts makes highly doubtful. The connection of the physical series with the mental series, viewed from the causal standpoint, is purely arbitrary. We can see no reason why one form of motion rather than another should be attended with sensation. It would be nothing more surprising if it were found that only certain intensities of nervous action are attended by sensation. In that case, nervous action, which falls below a certain degree of intensity, would not produce latent mental modifications, but would have no mental effect at all. If it be said that this view introduces an arbitrary break of continuity, the answer must be that no theory can escape such a break. Even the theory which regards thought as the inner face of nervous movements cannot tell why a given movement, say an oscillation in an elliptical orbit, should be attended by thought, while another, say a rectilinear vibration, should not be thus attended.

2. Argument *b* rests on the assumption that the peculiarities of the physical cause must reappear on the mental side. If the antecedent is a series of waves, the consequent also must be a series of shocks, and the conscious effect can only be the integral of those shocks. Here, again, is an extremely doubtful physical analogy. Considering the unlikeness of the physical and mental series, and the arbitrary nature of their connection in general, it is

impossible to form any rational expectation as to what mental consequent shall attend a given physical antecedent. Whether it shall be as coarse-grained as the antecedent, or an absolute *continuum*, must be decided by observation of experience. Moreover, we know that sounds do not tend to fuse in consciousness, but remain distinct. This fact is the basis of music. Otherwise, the different tones would run together, and all relations of harmony would disappear. If, then, a given sensation appear as a strict *continuum*, with no hint of its discrete antecedents, we must reject the alleged discreteness of the sensation until the fact is demonstrated. Until then, we shall hold that one form of nervous action is attended by discontinuous sensations, and another form by a continuous sensation; and that, in passing from one to the other, the discontinuous do not remain and fuse into the continuous, but that the discontinuous vanish and the continuous takes their place.

Otherwise expressed, suppose a, b, c, d are a series of sensations which, under changed nervous conditions, are displaced by a new sensation, M . How is this to be interpreted? We may suppose that a, b, c, d are the mental accompaniment of the nervous state R , and that M is the mental accompaniment of the nervous state S . In that case there would be no passage of one mental state into another, but a displacement of one by another owing to a change in the external ground. This is the view above suggested; and if the antecedent sensation were single, it would be accepted at once. When two different notes are sounded successively, it never occurs to us to regard the second as a transformation of the first; we rather regard each as the mental effect appropriate to its physical antecedent. But when the antecedents are plural and there is no break of temporal continuity, then we think this view insufficient.

Let us take, then, the other view, and see if it meets the purpose of its invention. a, b, c, d are antecedent sensations, whose conscious effect is M . If, however, they are truly latent mental states, M can be explained only by supposing a, b, c, d so to act upon the mind as to cause it to produce in itself the conscious sensation M . But in that case it is impossible to see what advantage a, b, c, d would have over the nervous changes themselves. These might have as their direct resultant M , as well as the series a, b, c, d ; and the series would be a useless intermediary.

If, on the other hand, a, b, c, d fuse into M , this is only a figurative way of saying that a, b, c, d exist no longer as either conscious or unconscious mental states, and that M alone exists. An implicit hypostasis of mental states leads us to fancy that their substance must flow together, as in all fusion, to make the compound. If it be said that a, b, c, d are M , as the elements of a molecule are the molecule, this is another misapplied physical analogy, and supposes sensations to be things. Further, it is an attack upon consciousness, as it violently identifies what is given as distinct. It would declare, for example, that the coexistent sensations of the several colors of the spectrum are the sensation of white light. If, finally, it be said that an analysis of M reveals a, b, c, d as constituent elements, that only shows that they may exist out of definite consciousness, not that they exist out of all consciousness. In short, the simplicity or complexity of a sensation can never be decided by apriori assumptions concerning the way the physical antecedents must work, but only by analyzing the sensation as found in consciousness. This desire to trace the peculiarities of the physical cause into the mental effect has led to much absurd dictation as to what we may experience. Thus black is no color; cold is a negation, etc. Psychologically, however, they are as positive as any other sensations.

3. Argument *c* overlooks entirely the fact that the composition mentioned may take place in the nerves rather than in the mind. Indeed, the very experiment relied on proves this. When a disk on which the primary colors are painted in proper order is made to revolve rapidly, a sensation of whitish light is produced. When the disk is at rest, or is instantaneously illuminated by the electric spark, there is no blending of colors. This shows that the blending does not take place in the mind, but in the nerves. No inspection of the color-spectrum reveals the slightest tendency towards fusion. But when the spectrum is in rapid motion the nerves receive a variety of impulses which, modifying one another, produce the resultant nervous state which founds the sensation of white light. We know that consciousness keeps sensations separate after they have once arisen; and we know that nervous impulses can modify each other. There is no need, therefore, to assume a series of unconscious mental states to account for the composition. The known laws of nervous action suffice for that; and, in addition, the mental state is not a compounded one. It is in itself as simple as any of its alleged components; and just as each of them is the mental attendant of a certain nervous state, so it is the mental attendant of a certain other nervous state.

This matter may be summed up as follows. The primal elements of the interaction between soul and body are unknown. It may be that the conscious sensation is the immediate reaction of the soul against the nervous action; and it may be that the first effect of the nervous action is a change in the organic activity of the soul, and that the conscious sensation is a reaction against this change, or an expression of it. But while we do not deny that there may be such sub-conscious activities in connection with sensation, the facts thus far considered do not compel their assumption. If they are assumed, it must be on the basis

of other facts, especially of forgetfulness and reproduction. These will be considered in their proper place. Hence we draw the conclusion that the assumption of intermediate affections between the nervous action and the felt sensation is unnecessary. It is based upon doubtful physical analogies and ambiguous facts, and, worst of all, it helps us to no solution whatever. But it is an obvious principle of method, that useless and unverifiable hypotheses must be avoided. Hence it cannot be the duty of the psychologist to prove that these states do not exist. It is rather the duty of the theorist to show that they do exist, and that they throw any light upon our problems.

Closely akin to this question is another, concerning the simplicity of our sensations. For various reasons, partly speculative and partly partisan, the claim has been set up that none of our sensations are simple, but admit of resolution into component elements. In this way it was sought to bring the apparently incommensurable classes of sensation together, so as to exhibit them as multiples of some common unit. Here the speculative interest was active. The hope was also entertained, that by such a showing the resources of the associational psychology might be greatly increased. Here the partisan interest was apparent.

The value of this view can best be determined by analyzing it. We need to know, first of all, whether the aim is to analyze sensations into conscious, or unconscious components. In the latter case, we should have the view just discussed; and then we should be quite at a loss to see how unconscious elements can be combined to form a conscious sensation. One might as well aim to construct a sound out of a pair of silences. The only claim that could be made would be, that, when the mind performs unconsciously certain functions, its nature demands that it should perform a certain conscious function as a consequence.

But this would be far enough from a doctrine of composition of sensations.

If, however, the aim is to analyze our sensations into conscious elements, then, of course, the alleged elements must be pointed out. If a common element is alleged to exist, we need to know how out of this unit such apparently incommensurable classes are built up. We also need to know whether the elements are fused to form the compound, or whether the elements exist in the compound. If the fusion hypothesis be adopted, we must then decide what such fusion means, and how it would differ from the simple disappearance of the elementary sensations, and their replacement by a new and different sensation. If we adopt the other view, we then have to say that a given sensation, say white light, is the sum of the sensations of complementary colors. But this identification is impossible, and we are thrown back upon the view that one set of sensations disappears and is replaced by a new sensation which contains no trace of its antecedents. In proof of the doctrine of composition, it is said that a musical tone seems perfectly simple and yet is demonstrably compound. But here, too, we need to distinguish between the composite nature of the physical antecedents and the composition of the tone itself; and we need also to distinguish between the fact that a simple tone may have several distinguishable elements, and the claim that these elements first exist as distinct sensations and are then fused into an apparently simple tone. When these points are all considered, the analysis in question will seem neither so easy nor so promising.

Let us state the question in a new form. Suppose that a, b, c, d are elementary sensations which give rise to M , a new sensation. M may coexist with a, b, c, d ; and then the latter would not be the components of M , but its conditions. Or a, b, c, d may disappear from conscious-

ness, and M may take their place. In this case we may say that a, b, c, d have fused into M ; but this would be only a figure of speech. Or we may say that a, b, c, d are M ; but this would be false. It only remains that we say that a, b, c, d are conditions against which the mind reacts by producing the new sensation M . This does not contain a, b, c, d , and is not made out of a, b, c, d , but arises under the conditions a, b, c, d . But in order to this there must be a specific mental nature, N , which contains the ground of the new reaction, M ; otherwise there is no reason for going beyond the original a, b, c, d .

Indeed, psychology has been haunted at this point by an implicit hypostasis of sensations. They have been tacitly viewed as self-identical things, or as mental atoms, which may enter into a great variety of mental molecules, thus producing new mental states and forms while at the same time they remain self-identical and never leave the plane of their own sensational nature. In this way the higher mental states have been exhibited as compounded from sensations, and there has been an appearance of striking and profound analysis. Meanwhile, the hypostasizing tendency of the mind plays its most transparent trick with us. In truth, sensations are not things, but functions; and their union can only mean the replacement of one function by another. In that case the one function disappears without leaving any substantial remainder, and another function takes its place, yet without being made out of any stuff left over from its predecessor. Indeed, even in the physical world the composition of forces does not involve a fusion of several forces into one, except in a figurative sense, or a continuance of the components in the resultant, but a replacement of the component forces by a new one distinct from them all, but dynamically equivalent. The chief art in analyzing our apparently simple sensations into simpler elements seems to consist in misapplying misun-

derstood physical analogies, together with sundry disjointed remarks on the short-comings of the introspective method. At all events, it does seem desirable to distinguish between the complexity of the physical cause and that of the mental effect, and between the succession of mental functions and their substantial identity.

Each class of sensations, especially the intellectual ones, furnishes a subject for extended study. Such works as Helmholtz's "Sensations of Tone" and "Physiological Optics," and Weber's "Studies of Touch," are examples of what may be done in this field. But such work, though highly interesting and valuable, reveals no new psychological principles, but only specifies those with which we are already acquainted.

We pass to a second factor in mental activity, the mechanism of reproduction.

CHAPTER III.

THE MECHANISM OF REPRODUCTION.

A LARGE and influential school of psychologists hold that simple sensibility is the only original faculty of the mind. When sensations are produced, they enter into interaction with one another, and form various combinations according to certain laws. Given sensations and their laws of interaction, we may deduce all the so-called higher mental faculties as consequences of these simple facts and principles. This fact makes it desirable to consider the mechanism of reproduction at this point. The results reached will be valid for the reproduction of all mental states, as well as for sensations.

Upon the cessation of nervous action, the corresponding sensation quickly vanishes, yet without being utterly lost. It is possible to retain or to reproduce the sensation in thought without the presence of the original stimulus. In some sense, then, past sensations, though out of consciousness, do still exist. According to some they exist as latent, or sub-conscious, mental modifications; according to others, they exist as more or less permanent modifications of the brain.

These reproduced sensations, which we may call representations, differ widely from their originals. The logical content is the same, but the sensibility is differently affected. Remembered pain or pleasure has the same significance for the intellect as real pain or pleasure; but for the sensibility the difference is absolute. There is an air of reality about the original experience which the recollection never has. The lightest actual rustle is more vivid

than the memory of the loudest noise. A slight pain distresses more than the remembrance of agonies. This difference is most easily explained by supposing that the recollection is only a mental act, while the original sensation had its external ground. The same distinction of vividness obtains between all actual and remembered mental states when any element of emotion or external perception entered into the original experience. Where, however, the original experience was one of logical thinking simply, it can be repeated without loss of vividness. The antithesis of faint and vivid mental states, as expressing the distinction between a remembered and an original experience, is, therefore, not absolute.

Our mental states, sensational or otherwise, do not lie unrelated in the mind, but combine into groups and classes according to certain rules, so that they suggest or recall one another. A given experience, *A*, can recall another, *B*, like it, or which has been experienced in connection with it. The spoken, or written, word recalls the meaning; an odor suggests the flower, etc. In this way simple representations are combined into compound representations; and any element of the compound tends to recall the whole. Our notions of sense-objects are all compound representations; yet so swift and subtle is the work of association that the fact is quite overlooked. A given sense is shut up to a single form of sensation. Vision gives us only percepts of color. Touch gives us only percepts of hardness, resistance, etc. Smell can give nothing but odor. There was a point in our mental life when these several percepts were not united; now they are so firmly united that we can hardly believe that they were ever separate. In like manner, the spoken or written word suggests the meaning so surely and involuntarily, that we seem to hear and see the very thought itself. If there were not many languages, it would doubtless be contended that there is a

pre-established harmony between the sound and the sense. Such union we call an association. It rests upon no rational connection. There is nothing in any one of the senses which implies that the other senses must exist. There is nothing in a given sound which fits it to express only a certain idea. The connection is purely one of fact. The elements have been associated in experience, and tend on that account to recall one another. Hence the senses seem to act vicariously. In perception any sense seems to give us the entire thing. We see the color, or smell the odor, or even hear the name; and the whole thing seems to stand before us. The component elements have been welded into a group, and thenceforth they belong together. This fact is called the association of ideas,—where ideas stand for any mental state whatever. We postpone further description of the fact, and pass to consider the theories for its explanation.

Two classes of theories exist. One finds the mechanism of reproduction in the organism, especially in the brain; the other finds it in the mind itself. And since the reproduction and association of ideas are mental facts, in most cases without any assignable physical stimulus, it is plain that the mental explanation must have precedence of the physical, unless it be found untenable. Psychology must not have recourse to physiology until its own resources fail. We begin, then, with the mental theory of reproduction.

Our ideas come and go in consciousness without the presence of the original stimulus, and according to laws of their own. To explain this fact, a highly complex mental mythology has been invented. In its coarser forms the mythological character is too evident to need more than mention; for example, that consciousness has a certain size, and that hence many ideas cannot find room in it, as if they themselves were extended, and impenetrable, and crowded one another out,—all this is too plainly a figure

of speech to need examination. The same is true for the expressions which present consciousness as a kind of light, which, falling upon ideas, enables the mind to see them, but which, when spread over many ideas, grows less and less intense, and finally leaves outlying ideas in a kind of outer darkness. Such notions arise from the effort of the imagination to picture a process which is essentially unpicturable. The most distinguished effort toward a theory of reproduction is that of Herbart.

According to Herbart, a simple sensation is a reaction of the soul against external action, and is called by him an act of self-preservation. Such a mental function is in its nature indestructible; and if it were not interfered with, it would last forever; that is, it is subject to the law of inertia. But many such functions exist; and these, because of the unity of the soul, must enter into interaction. They are then conceived as endowed with forces whereby they act upon one another, and re-enforce or repress one another. Consciousness is next furnished with a "threshold," which represents the intensity below which an idea is lost to consciousness. When the intensity of the function is above the threshold, the idea is in consciousness; when below, the idea is out of consciousness. This interaction of the ideas results in their passing back and forth across the threshold; that is, in and out of consciousness. In this way, both the passage of ideas from consciousness and their return are explained by the same process. The forces themselves consist in the opposition of the ideas, and in their intensity.

This view is constructed entirely on the analogy of physical mechanics, and more especially on the analogy of molecular mechanics. The representations, or persistent sensations, are regarded as the units of the mental life, and by their interaction they are supposed to explain or produce all the higher forms of the mental life. We

may call it, then, a system of mental mechanics, in the strict sense of the term. The theory has the gravest difficulties, as follows.

1. The forces by which the ideas are said to act upon one another are imaginary or unintelligible. It is impossible to understand either the opposition or the intensity of ideas in such a way as to make them adequate to the demands made upon them. Both of these terms may be applied to the ideas as having a certain meaning, or to the ideas as mental acts. The former would be their logical, the second their psychological interpretation. In neither of these senses can they be made to do what they are supposed to accomplish.

Opposition considered as the logical relation of the contents of ideas is no psychological force; and ideas do not affect each other according to such a law. The most diverse ideas logically considered show no psychological opposition; and the most similar show no tendency to coalesce. The colors of the spectrum remain separate, and the sounds of a chorus also. The most contradictory ideas can be conceived with the utmost ease, provided we do not attempt to identify them in a judgment. Sour and sweet, round and square, straight and crooked, far and near, are ideas which can coexist in consciousness in the utmost psychological amity, though logically hostile. Hence, logical opposition counts for nothing as a moving force among mental states.

The opposition, then, must be psychological; but this is an idea hard to understand. Thoughts as mental acts have none of the qualities which belong to their logical contents; for example, the thought of the circle is not round, nor is that of sugar sweet. There is no assignable opposition between the activity which thinks bitter and that which thinks sweet. The only meaning to opposition seems to be the general fact, that the mind cannot perform many func-

tions or attend to many objects at once, and hence the performance of one function or attention to one group of objects excludes the performance of other functions or attention to other objects. But this fact also expresses no moving force among the ideas themselves, and also no relation of the ideas to one another. The very utmost that such opposition among ideas would accomplish, would be the exclusion of many ideas from consciousness; it would in no way provide for their return.

Intensity remains to be considered; and this is even a darker notion than opposition. When speaking of sensations, the meaning of intensity is plain. It refers to the amount of disturbance of our inner state. In case of pains more or less intense, the amount of inner disturbance is more or less. But intensity has no clear meaning when applied to representations, or to ideas of any kind. The intensity of the sensations themselves disappears entirely from the representations. There is nothing more intense in the idea of a loud noise than in the idea of a faint one. Ideas of intensity are possible, but intense ideas are meaningless.

Intensity does not apply to the content; it is equally inapplicable to the mental act. Suppose we conceive a given object, *A*, there is no meaning to the proposition to conceive *A* with double intensity. If the object were a sensation, we should find that such an attempt resulted, not in representing *A* with double intensity, but rather in representing 2 *A*. Thus, in case of a noise, the attempt to remember a noise more intensely would really result in recalling a louder noise. In short, ideas do not vary in intensity at all, but rather in clearness or distinctness. Thus a triangle may be conceived as three-sided, and then the matter is at an end. What the intense representation of a triangle might be, as distinct from a clear one, is past all finding out. We can, indeed, have a more or less

extensive knowledge about a triangle, but a more or less intense knowledge is nothing.

Moreover, the clearness has no meaning when applied to the simple representations with which Herbart works. Thus, an unclear representation of blue would always mean a representation of unclear blue, that is, a blue bordering on some other color. Hence the clearness of a simple representation also admits of no degrees. When we fancy that we are representing a simple quality with varying degrees of clearness, we are really representing different degrees of the quality itself. As for the clearness of our complex ideas, we shall find hereafter that this is no property of the ideas themselves as mental states, but exists only in and through the act of apprehension. It is the comprehension which is clear, not the idea.

We conclude, then, that neither opposition nor intensity, in whatever sense they are taken, can be viewed as moving forces among mental states. Indeed, if we are to find such a force anywhere, it must be sought in a realm where the Herbartian is forbidden to find it. Feeling and interest are the great sources of the power of an idea over the current of thought. That line of thought in which we are interested draws all others away and wins the mind to itself. But this interest is no quality of the ideas, but is a certain value which the mind attaches to the ideas for the time being. In general, it is highly changeable, varying with the health, the general state of feeling, the time of life, and a great variety of obscure circumstances besides.

The general ambiguity of the theory deserves further notice. We may understand by idea either its logical content, or the mental activity by which it exists. But we cannot posit forces in the ideas in the former sense, as that would make them things. We must then take the ideas in the latter sense, and regard their interaction as taking place among a series of psychical functions, rather than

among logical conceptions. The functions a, b, c, d produce the conscious representations A, B, C, D ; but the interaction is only among a, b, c, d . We have just seen that the forces which Herbart attributes to the ideas are unmanageable in either case. Opposition has meaning only for A, B, C, D ; and intensity has no meaning. Intensity, again, has meaning only for a, b, c, d ; and opposition has no meaning. Nor is any mechanical representation of the relations of a, b, c, d possible. First, there is no assignable way of keeping them separate. When several impulses, x, y, z , are communicated to the same body, M , they unite in a common resultant, R , in which x, y , and z no longer exist. If we should suppose them to persist as separate impulses, and should next endow them with attractions and repulsions for one another, we should have precisely the problem in hand. And after we have thus isolated a, b, c, d , and have endowed them with utterly unrepresentable forces, we have next to consider whether we have not made them into things, and have not cancelled the unity of the mental subject itself. We are no better off if we regard them, not as actual functions, but only as tendencies to perform functions; for it is equally impossible to explain the separateness of the tendencies and the possibility of their interaction. In short, there can be no mechanical representation without the spatial separation and substantial nature of the interacting elements. Where these are lacking, mechanical terms are simply figures of speech.

In addition, it might be pointed out that, if the theory were true, the movement of our ideas would be different from what it is, both in their coming and their going. Our ideas ought to vanish through an indefinite series of degrees of faintness, all the way from the summit of consciousness down to the threshold; and they ought to recur strictly in their ancient form. But there is no need to dwell on this point.

It is easy to see how such a view arises. There are movement and connection among our ideas, and we seek to explain the facts. When several ideas are given, others are excluded; or when several ideas have been conjoined in experience, thereafter the recurrence of any one often leads to the recurrence of the rest. For the explanation of these facts, promising physical analogies abound. Let us endow the ideas with various attractive and repulsive forces; let us speak freely of their affinities and oppositions; and the problem is solved. With this outfit we can see the ideas beginning to interact, so as to re-enforce or repress one another. They pass back and forth across the threshold; simple ideas may well combine into complex ideas, just as atoms form molecules; and the evolution of mental heterogeneity from mental homogeneity is well under way. Few questions longer present any difficulty. Ideas pass out of consciousness, because opposing ideas drive them across the threshold. They return to consciousness because of a re-enforcement of energy on their own side, or because of a diminishing energy on the side of their opponents. Association is accounted for by affinity. *A* and *B*, in the group *AB*, are held together by mutual attraction, and hence it is perfectly clear why *B* should always follow the appearance of *A*.

But the joy of new insight must not prevent us from asking whether our theory is to be taken in earnest, or only as a figurative representation of an unpicturable fact. But we cannot seriously regard our theory as a matter of fact, for the following reasons:—

1. If we mean by ideas their logical content, we must make them things; we must assume that they can exist out of consciousness; and we must view reproduction as a literal resurrection of the old experience.

2. If we mean by ideas the psychical functions which result in conscious states, we are totally unable to name or

define, or in any way represent, the forces which play among them. We are equally unable to adjust the theory to experience, except in the vaguest way; and then only because we have constructed it with reference to experience. The deduction only draws out what we put in.

It is plain from the foregoing that our mechanical constructions of the reproductive process are failures. All that we do is to apply the terminology of mechanics and dynamics to the observed movements of the ideas, without even the possibility of understanding our own terms in their special applications. The mechanical terms lead us to fancy that we have established a mental dynamics, whereas we have only a series of unintelligible metaphors. If we resolutely eschew these, we are left simply with the fact of movement and connection among our ideas. This fact must, indeed, have its sufficient ground and explanation; but it does not admit of a mechanical construction after the manner of molecular dynamics.

The English associationalists have never accepted the Herbartian ontology; and they have also never had any clear conception of their own position. They waver between regarding the association of ideas as an ultimate fact, and viewing the relations of contiguity, similarity, etc. as forces of mental cohesion and movement. In the latter case all the difficulties of the Herbartian theory reappear. This uncertainty has led the later writers of this school largely to adopt the physiological explanation.

The dark unpicturability of the reproductive process on the psychological side, the near approach to absurdity involved in the doctrine of unconscious ideas, and an unwillingness to leave reproduction unexplained, have led to an attempt to find the ground of reproduction in the brain rather than in the mind itself. If we may suppose each of our ideas to have some physical representative, we seem to escape many of the difficulties mentioned. We need

no longer to speak of unconscious ideas, for that which represents the ideas when out of consciousness is not an unimaginable mental function, but a distinct physical representative. For the movement and coherence of our ideas, also, we need not assume any unconstruable forces among the ideas, as the dynamic relations among their physical representatives dispense with them altogether. Now all is clear again. What appears subjectively as the association of ideas is objectively a dynamic relation of physical quantities. This theory seems so promising that we cannot but be filled with hope. Indeed, we may even expect to see thought itself going on apart from consciousness, as the outcome of this "unconscious cerebration."

This theory may be held in a purely materialistic sense, and indeed it has been largely supported by materialistic assumptions. In this sense the theory is repudiated in advance. But it may also be held in connection with a spiritual conception of the soul. Its most general assumption is, that every mental state, of whatever kind, makes some relatively permanent impression on the brain, which thus becomes a register of experience. This impression is variously conceived, as a tendency, or as special forms of movement, or as special groupings of the brain-cells. The result is, that the brain tends to repeat its past forms of activity, thus reproducing the past mental experience. This is the basis of reproduction.

The general dependence of reproduction upon the brain may be conceived in two ways. First, we may suppose that the brain conditions an activity of the mind which it does not itself produce. Second, we may suppose that the recurrence in experience of ideas due to a re-excitation of their physical ground is the sum of reproduction. The former view leaves reproduction a psychical process; the latter makes it a physiological one. This is the view in question.

Two capital difficulties must be noticed in every such theory:—

1. It provides for no distinction between original and recalled experience. The same parts are supposed to be active in memory which were concerned in the original experience, and withal in the same way. Hence a memory ought to appear as a faint perception, and not as a reproduction of something before experienced. The memory of a visual object ought to be a seeing of that object; and that not merely with the mind's eye, but with the bodily eye as well. The theory provides only for faint perceptions and vivid perceptions, but not for the distinction between things remembered and things perceived.

2. The theory makes no provision for the most essential element of reproduction,—memory or recognition. At the very best, it would only provide for the recurrence of similar experiences, but not for their recognition. Repetition, however, is not memory. Re-experience is not recognition. If, then, the brain were a storehouse of ideas, and should continually present them before the mind, there would be nothing to suggest to the mind the fact of reproduction, unless the mind had an independent power of recognition in itself. Just as a person with a very feeble memory might read the same book over and over again without a suspicion of the repetition, so the brain-register alone could never bring us to a knowledge of the past unless the mind had in itself an independent power of memory. The re-presentation of an external object is plainly not identical with a memory of that object; and it might conceivably take place forever without awakening the latter. But the ideas supposed to be re-presented by the brain-register are just as external to memory. The recurrence of experience is not the experience of recurrence. The latter is possible only to the mind itself, and can never be done for it by anything beyond itself. The memo-

random may help the mind to recall ; but the recollection must at last be the act of the mind itself. On this theory the brain would be the organ of memory in the same sense that a memorandum-book is an organ of memory.

To this it may be objected that a reproduced experience will always have certain marks which forbid its identification with the present experience, and that, therefore, we must locate it in the past as a previous experience. But this fails to meet the case. Without a self-verifying power of memory to some extent, this distinction of present and past experience would never arise, but only a division of experience into vivid and faint states. Without a direct knowledge of the past, these faint states cannot be related to the past, but would remain a special form of present experience. Of course all these states, vivid and faint alike, are present states. Left to themselves there is no hint of reproduction in them. We should hardly descend to the mythological fancy that each one is labelled with its date ; and if we did, we should next need some mind to read the dates and arrange the states accordingly.

It appears, then, that no cerebral theory of reproduction can get on without a separate power of reproduction in the mind itself. It also appears, that the reproduction possible to the cerebral theory becomes proper mental reproduction only through the action of the mind itself. The former is so far from explaining the latter, that it becomes known only through the latter. But as mental reproduction is the fact to be explained, and as cerebral reproduction is only an hypothesis for its explanation, and fails withal to meet the purpose of its invention, it is plain that the latter has no further reason for existence. Physiology means well, and is doubtless a most useful and estimable science ; but in this case psychology must decline its assistance, of course with thanks for its good intentions.

It is a disappointment, and even a grief, to find this

promising theory performing so little. The difficulties dwelt upon are fatal, even if the cerebral theories were complete in all other respects ; which is far enough from being the case. But we postpone consideration of their inner mechanism to the Appendix, and draw here only the conclusion that, whatever the significance of the brain for memory may be, it does not consist in doing the mind's remembering. This is one of the elegant conceptions for which psychology is indebted to the "objective method." The brain is the organ of memory in the same sense that it is the organ of thought. It neither thinks nor remembers ; and still less does it furnish the mind with ready-made thoughts and recollections. It simply supplies the conditions of mental activity in these directions, without being in any way able to produce it.

Both the physical and the mental theories of reproduction fail to give us any insight into the facts. Indeed, this entire department of psychology has been devastated by rhetoric ; and our theories are never more than descriptions of the fact, or inferences from our own figures of speech. We recall the past, we say ; and forthwith we judge that it must have been somewhere in the mind ; how else could it be recalled ? We have knowledge of many things of which we are not always conscious ; as mathematics, science, languages, etc. This knowledge is said to be in the mind, and, when it is not in consciousness, where can it be but below consciousness ? Then, if rhetorically inclined, we speak of memory's vast halls, dim chambers, niches where the past is stored, etc. If we are philosophical, and desire accuracy, we speak of latent, or subconscious, mental states as the forms in which this knowledge and experience in general exist. Then it is the easiest thing in the world to enrich and advance psychology by the invention of faculties. The retention of experience certainly implies a retentive faculty. Its con-

servation, also, is impossible without a conservative faculty. Its reproduction, without doubt, demands a reproductive faculty. Its recognition, of course, calls for a recognizing faculty; and the location of an event in the temporal series of our experience must be due to a locating faculty. It would not be difficult to invent several more faculties if the interests of the science called for them. But all these faculties are plainly abstractions from the fact to be explained, and do not advance our knowledge in the least. Nor are we any better off when we appeal to mechanical physics. The facts have no physical analogue; and the application of physical analogies only misleads us by an appearance of knowledge, while they really prevent us from perceiving the true nature of the facts. All that is possible, therefore, is to seek some expression for the facts which shall give them without distortion, and which shall not transcend the facts themselves. We venture the following statements:—

1. Thoughts and mental states in general are not things, but mental acts or functions. As such, they exist only in and through the activity of the soul; and when the soul's activity is directed elsewhere, voluntarily or involuntarily, they cease to exist anywhere, either in consciousness or out of it. This explains the loss of ideas from consciousness.

2. The mind is not an extended substance, with various strata in which the marks of its ancient life remain, or on which its past is written. Except in a figurative sense the past is not in the mind at all. The fact is this. The soul, in distinction from what we assume for the physical elements, is not indifferent to its past, but carries that past with it, not at all in the form of latent modifications, but solely in the power to reproduce that past in consciousness and to know it as past. Our possession of a knowledge of which we are not conscious means only that we can reproduce that knowledge upon occasion. In no other

sense is past experience latent in us. This power of reproduction and recognition admits of no deduction, and has no analogue elsewhere. All attempts to tell how it is possible overlook the essential features of the fact, while the various faculties invented for its explanation are abstractions from the fact itself.

3. When two or more elements have been joined in a common experience, the recurrence of any of these elements often leads to the recurrence of the whole experience. Otherwise expressed, when the mind has performed a given function, it may be stimulated thereafter to renew that function by the recurrence in experience of one or more of the factors which entered into the original function.

4. Reproduction in no way brings back the old fact. The particular experience as a mental fact vanishes forever. What remains is the ability to perform anew the ancient function, thus producing a new experience of similar content to the old. In reproduction the mind does not bring from the depths of unconsciousness a series of particular experiences, which have lain there since their first occurrence ; but it is stimulated to reperform the original function, thus producing a totally or partially identical content. How the mind can do this we do not pretend to know. We have to be content with knowing that it does it, although we cannot construct the process.

In reproduction a distinction is made between the revivability of an experience and its actual revival. This depends upon the fact that certain experiences are more easily and certainly recalled than certain others ; and the former are said to be more revivable than the latter. Understanding revivability in this sense, we may study its conditions.

Revivability is often said to depend on the depth of the original impression ; but this is only a figure of speech which leads us round in a circle, for there is no way of

measuring the depth of the impression except by the revivability itself.

Revivability varies with several factors : —

1. Attention and discrimination in the original experience are important elements. In general, we remember that to which we attend with more certainty than that to which we give no attention.

2. Interest also is equally important. We retain a much firmer hold of that in which we were interested, than of that to which we were indifferent. Interest works directly as an emotional element, and indirectly by intensifying our attention.

3. Repetition increases revivability. Frequent forms of activity tend to acquire the ease of habit.

4. Revivability in general diminishes with time. The great bulk of events fades out with the years.

Exceptions are not lacking to most of these rules ; but their general truth is unquestionable.

The question is often raised, whether anything is ever forgotten. This can only mean, Does any experience ever become absolutely unrevivable ? Most events of life, as Locke says, are laid in fading colors, and very quickly fade out beyond any present power of restoration. On the other hand, it is certain that events long forgotten have been recalled with the utmost freshness in some crisis of life, in some access of disease, or in some emotional exaltation. This recall, too, has extended not merely to important matters, but to insignificant details. Such facts at least prove a possibility.

But revivability is not revival, but only the possibility thereof. How does the possible revival become actual ? The general answer has already been given, that revival takes place through the occurrence in present experience of some factor whose content is similar to that of some factor of the recalled experience.

The current answer to this question is given in the so-called laws of association. Of these it is not always clear whether they are supposed to be descriptions or explanations of the reproductive process. In truth, they can never be anything more than descriptions. These laws being only classifications of experience, there is room for somewhat of arbitrariness in fixing a standard of classification. Accordingly, it often happens that writers redistribute the facts according to some new rule, with the result that new laws are discovered, and psychology is seen to be a progressive science.

The laws most commonly given are these: (1.) contiguity in space and time, which is sometimes reduced to contiguity in time; (2.) cause and effect; and (3.) likeness and contrariety, or similarity and contrast. That is, (1.) things which we have found together in space and time often recall one another; (2.) the cause recalls its effect, and conversely; and (3.) ideas often recall others like them, and sometimes contrasted ideas. In addition, the means suggests the end, and the end the means; the sign suggests the thing, and the thing the sign. Such a series might be continued indefinitely, thus producing the appearance of fine psychological observation. Concerning contiguity and similarity there is much debate whether one underlies the other, or whether both are equally fundamental. Among those who regard only one as primary, there is no agreement as to which shall be put first.

Many philosophers have sought to reduce all these laws to one, which has been called the law of redintegration. This formidable term means, that, when any part of a previous state recurs in experience, the mind tends to complete, and thus to restore, the past experience. Some of the formulations of this law are unfortunate, and would restrict it to the reproduction of objects which had previously been joined in thought or experience. On this ground, it

has been denied that this law applies to association by similarity; as in cases of resemblance things suggest one another which have never been united in any previous experience. In its tenable form this law reduces to the statement already made, that the mind can be stimulated to perform anew any past function by the recurrence in experience of one or more of the factors which entered into that function. This principle, which may or may not be called redintegration, contains, we conceive, all the so-called laws of association.

All the laws except that of resemblance appear at once as consequences of this formula. Contiguity in space and time has no effect, except as things and events thus contiguous are apt to be joined in a common experience. The contiguity is no factor except in an indirect way. If things or events had not been together, they would not have been known together, and hence would not have been recalled together. The same considerations apply to suggestions of cause and effect, means and ends, etc. Our actual life compels us to connect these ideas very often; and hence, when one element is given, the other is likely to recur. Suggestion by contrast, when it does occur, comes under the same head. There are sundry contrasts which have a special value for our experience, and hence are frequently joined in thought. Beyond these cases the suggestion by contrast is a pure fiction.

There is, however, another conception of contiguity, according to which the sensations themselves are contiguous, and cohere accordingly. This is another phase of the mythology which has long infested this region. Sensations have no spatial contiguity, as if they existed side by side and cohered at their surfaces. Nor can we make any use of their temporal contiguity, unless we mean to affirm a coherence of particular experiences, so that the reproduced experience is the veritable old one brought back

to life. And even such a myth would be useless ; for the present particular experience is here for the first time, and has never been contiguous to anything. How, then, can contiguity act, when there has been no contiguity ? It would tend to clearness, and thus to progress, if some one would bethink himself to define contiguity, and to explain what it is that has been contiguous. Quite unconsciously, it would seem, the associationalist operates with universals, and not with particular experiences.

Similarity or resemblance remains to be considered. It is not easy to know how this law is to be understood. If we take it literally, it seems to find scanty support in experience. As a rule, tones do not suggest tones, nor colors colors, but rather other and diverse elements with which they have previously been joined. Taking the law in literal strictness, it could never take us outside of the ideas to which the suggesting element belongs. No element could transcend its class. Thus, a sweet taste might suggest another sweet taste, but it could not by resemblance suggest a piece of sugar, or the fruit or any other circumstance connected with it. For this we should have to fall back upon our principle.

In general, this doctrine of association by resemblance is extremely obscure. To begin with, it seems absurd to talk of an association between elements which have never been joined in experience, and yet it is precisely such associations which this doctrine contemplates. The present experience, *a*, which I now have for the first time, suggests another, *b*, had long ago. But *a* and *b* have never been joined, and hence never associated. It is, then, a strange use of language to speak of them as associated. Let us escape this paradox by saying that *a* suggests *b*. Still the fact is as dark as ever. Why does the mind go from *a* to a similar idea, *b* ? It cannot be because they seem like to the mind ; for that would suppose the transit made, and

both objects to be already in thought. The likeness so far as active in suggestion is unperceived; for by the time it is perceived it has done its work. But how can unperceived likeness be a ground of suggestion?

The answer is found in the principle we have proposed. Likeness as such becomes a ground of suggestion only as the present experience, $A\ b\ c\ D$, contains elements $b\ c$, common to another experience, $M\ b\ c\ N$. This common element, $b\ c$, stimulates the mind, under favorable circumstances, to fill out the allied form $M\ b\ c\ N$. Sometimes $b\ c$ is entirely inefficient, and then there is no suggestion. Sometimes it stimulates the mind to perform the function $M\ b\ c\ N$, but with only partial success. Then we have the peculiar experience of being reminded of something, we cannot say what. Sometimes the function is fully performed, and then the object $M\ b\ c\ N$ is fully recalled, and we ascribe the result to its likeness to $A\ b\ c\ D$.

To understand this result, we must remember that all our experiences are compound, or have several distinguishable elements; for example, a picture may be distinguished by its subject, the treatment, the grouping, the drawing, the coloring, the frame, the hanging, and even by the location; and association or suggestion may take place through any one of these elements. Hence we may put an object, A , equal to its elements, $a\ b\ c\ d\ e$; and another object, B , may be put equal to its elements $a\ b\ l\ m\ r$. If then we have A before us, and our attention be concentrated upon it, there will be no suggestion. In other cases the factor $a\ b$, common to both A and B , may stimulate the mind to complete the function $a\ b\ l\ m\ r$. If this succeeds, B will be recalled or suggested by virtue of the likeness of A to B , that is, because of the common factor $a\ b$. If it does not succeed to the extent of completely reproducing the function, then we say that A reminds us of something, we cannot say what.

Instead, then, of saying that association by resemblance will not come under our principle, we must rather say that there seems to be no way of bringing it under any other. At all events, we can hardly adopt the fiction that similarity is a real force of attraction; although many psychologists have not scrupled to speak of the "attraction of similars."

Our conclusion, then, is that ideas have no attractive or repulsive forces among themselves whereby they move and separate or unite, but that all their movements, so far as they are not due to volition, result from the mental tendency to reproduce past forms of activity when some factor of those forms is given. We find that all the laws of association are results of this principle, and it includes many facts of association besides. Thus we find that simple experiences alone have little power of suggestion. Simple colors or sounds suggest little, except as parts of a total experience into which they may have entered. In themselves they are so simple as to involve little mental activity, and hence the tendency to repeat it has little occasion to manifest itself. Very different is it with parts of a whole. Hence the recurrence of any of the factors tends to stimulate the mind to reconstruct the whole. An odor suggests the form and color of the flower to which it belongs; and all together may suggest places where the flower grows, and many other circumstances connected with it. So a tone may suggest a melody, and then its place therein, and then the circumstances under which it was heard, or those who used to sing it, etc. So the sound of a word may suggest its meaning, or its printed or written form, or the image of the thing meant, etc. In all these cases the various elements have been combined in previous experiences; and the more deliberate and conscious the relating of the several parts in the original experience, the more certainly does the mind reproduce them in connection.

Nor does the mind merely re-relate them; it relates them in the same manner as before. A succession of events is more easily reproduced in their original order, since that is the form of the original function. The alphabet, a melody, a series of any kind, can hardly be reproduced at all apart from the original order.

If a given idea had only a single association, it might be easy to trace the course of suggestion, and even to predict it. In fact, however, in our developed experience the same element, *a*, has entered into combination with a great many others, *b*, *c*, *d*, *e*, etc. This complicates the problem beyond all calculation. We have the groups *abc*, *ade*, *afg*, etc., indefinitely. Yet the recurrence of *a* does not recall all of these groups, but rather some one to the exclusion of the others. This special direction is due to special circumstances. A leading one is the predominant interest of the mind at the time. Suggestions are generally relevant to the matter in hand when the mind is seriously engaged upon any subject. In general, too, the greater the similarity, the more probable the suggestion; as then the mental activity in both cases approaches nearer identity, and the stimulus to reproduction becomes stronger. That is, two objects, *abcd* and *ae fg*, would be less likely to suggest each other than two other objects, *abcd* and *abef*, as the latter functions approach nearer identity than the former. Other grounds of direction are found in the tone and type of feeling, and also in our physical condition. One of the most marked defects of the common expositions of the doctrine of association is that they overlook the profound significance of the feelings and emotions for the association of ideas, whereas ideas are quite as often suggested by feelings as by ideas, and the general direction of association is especially due to the emotional state. But all these factors, the interest, the attention, the general current of thought and type of feeling, are incessantly changing. The mental

mechanism, if there be one, not only incessantly produces new combinations, but the elements and forces themselves are constantly changing. The result is, that variegated play of ideas which varies from an orderly suggestion of relevant thoughts to the apparently hap-hazard and lawless mental drift of reverie and dream.

It is a question whether the course of suggestion can always be traced, or whether the connecting links are sometimes out of sight. There is general agreement that the connecting links exist, but doubt exists as to the possibility of finding them. Experience, indeed, often presents us with ideas which seem to have no connection with our previous mental state. They appear to be new beginnings in the mental flow. To explain such cases, two theories exist. (1.) The connecting ideas were in consciousness, but vanished as soon as they had conjured up the suggested idea, and left no trace behind. (2.) The connecting ideas were not in consciousness, but below it as latent mental states, and the connection took place in this sub-conscious region. Suppose *A* is given in consciousness, and *C* suddenly appears. On the former view, *B*, the connecting link, was momentarily in consciousness, and disappeared without leaving any impression upon the memory. On the latter view, *B* was not in consciousness at all. In support of the former view it is urged that ideas are constantly pouring through consciousness, yet without leaving any impression on the memory because of their irrelevancy to our mental state, or because of our total lack of interest and attention. Thus, in reading, all the words make an impression upon consciousness, but as words they are immediately forgotten. In writing we consciously direct the formation of each letter, but the recollection vanishes with the act itself. Hence we need not assume sub-conscious mental states to account for the fact.

It is doubtful whether the fact itself exists which these

theories seek to explain. Both alike rest on the fancy that ideas are suggested only by ideas. Had it been seen that feelings, even of the vaguest sort, can suggest ideas, the fact in question would have been doubted. What suggested idea *B*? No idea *A* is found, but it is concluded that the idea *A* must have been there, either in consciousness or out of it. But, instead of idea *A*, it may have been a feeling *F* in any of its shades or modifications, and these may have been so fleeting as to attract no attention whatever. They may even remain in consciousness, yet so involved with other elements as to present no clearly distinguishable content. Instead, then, of saying that the connecting link is not in consciousness, we go as far as the facts warrant when we say that we do not distinguish the line of connection. There is certainly no occasion for falling back on unconscious mental modifications, or on what Hamilton, with a close approach to a contradiction, calls latent modifications of consciousness. The factors which enter into an object are so numerous as often to admit of no distinct recognition; and suggestion may take place through any of them. When suggestion does take place through such undistinguished elements, then we have the appearance of the fact assumed by the two theories, an apparently groundless suggestion. We have an illustration in the frequent experience of being reminded by something of another thing without being able to tell what it is in the first which recalls the second.

Various experiments are made in physiological psychology to measure the time of the associational process. Thus words are called, and the time elapsing before comprehension is measured. As yet nothing has been revealed beyond the unimportant but familiar fact that things are more quickly recalled in the measure of their familiarity, or that customary associations take less time than infrequent ones. By the aid of statistical tables and occasional

woodcuts this commonplace is made to assume a novel and severely scientific appearance.

Herewith we close the discussion of the mechanism of representative knowledge. The conclusion is, that the facts admit of no mechanical construction, and that only a general description of the process is possible. There is no theory which gives any real insight into reproduction, and no formula which enables us to trace the process in detail. The general law already given does not enable us to predict special cases; nor is it by any means always possible to trace the course of suggestion after the event has declared itself.

APPENDIX TO CHAPTER III.

CEREBRAL THEORY OF REPRODUCTION.

A DETAILED account of this theory seems desirable, not because of its intrinsic value, but solely because of its factitious importance. We have already pointed out that it may be held in a purely materialistic sense; and in that form it is repudiated in advance. But it may also be held in connection with a spiritual conception of the soul. Its most general assumption is, that every mental state, of whatever kind, makes some permanent impression upon the brain, which thus becomes a register of experience. Its common statement provides only for the recovery of sensations, as follows.

Every sensation has for its antecedent some molecular movement in the brain; and thereby, through repetition, the brain acquires a tendency to that movement. Thus permanent impressions of some sort are made upon the brain-tissue, and these provide for the repetition of the sensations themselves in their faint form as representations. In any future nervous action there will be a tendency to re-excite the earlier forms of activity, and the corresponding representations will be reproduced.

In this form the theory is manifestly incomplete, as it provides only for the case of knowledge obtained through the senses, whereas reproduction has to do, not only with this, but also with emotions, thoughts, resolves, volitions, etc. To make the doctrine adequate, we must assume that all mental states, whatever their origin, impress themselves upon the brain in such a way as to leave relatively permanent registers of themselves. We must next assume that

these registers interact in some way, and thus determine the appearance and disappearance of the corresponding ideas. Those who have held the view have generally held a sensational philosophy, and thus have concealed from themselves the enormous complexity of the theory.

As thus given, the theory is very vague, and needs further specification. It is not clear whether the nervous registers consist in special groupings, or in special movements, or in a form of organic habit, a tendency to repeat the customary forms of action. The more common view unites the first and second, and regards the nervous register as consisting in a special grouping leading to special movements within that grouping. The special grouping alone would be no ground for either sensation or its recall; and the special movement implies some special grouping as its possibility. These two views then imply each other. The third view will be considered by itself. Moreover, as the cell is the unit of structure in the gray matter of the brain, where by common consent these registers are located, the brain-cells are supposed to become the carriers of our experience through the modifications produced in them. We shall call the view, therefore, the nerve-cell theory; but our criticism will apply equally to any theory which regards the nervous register as consisting in special groupings and movements of the brain elements. By cells, then, we understand, not the physiological unit of structure, but the peculiar grouping which is supposed to bear our past experience.

We consider the cell theory first. To begin with, it is plain that we get no aid from the theory unless we refer different experiences to different cells. For if one and the same cell had to preserve distinct a multitude of impressions, it would be quite impossible to see how the one physical cell could do this more efficiently than the mind itself. Hence the theory has generally been regarded as

demanding separate cells for the preservation of distinct experiences; and this has even been regarded as an advantage, as it furnishes a ready explanation of the strange psychological fact that ideas do not coalesce in consciousness although without dividing walls. We have but to suppose each idea based upon the action of a separate cell to see why this is so. At least we are told so, although it is not at first clear that the distinctness of the cells out of consciousness must forbid the fusion of their resultants in consciousness.

This theory, like materialism, is perfectly intelligible until one seeks to understand it. Or, like materialism again, it explains facts in general very handsomely, but is rather at a disadvantage when applied to facts in particular. Having decided to call certain hypothetical molecular groupings representatives of ideas, and having further assumed them in various dynamic relations, we seem to have all the conditions of insight. But some difficulties emerge upon closer examination.

First of all, the complexity of the theory must be noticed. Take a single sense, as vision. The same object makes very different sense impressions, according to our distance from it. Every step toward it modifies the visual impression and the number of retinal elements concerned in the vision. Again, I may easily cause the image at any point to fall on different parts of the retina, and thus bring different nervous elements into play, and produce again new and peculiar sense impressions. But since these are all distinguishable, and since a given cell can receive only a single impression, it would follow that an indefinite number of cells is required to represent a short experience with a single visual object. The same considerations apply to any of the other senses. All admit of indefinite degrees of distinguishable sensation, and hence there must be a corresponding number of cells to make the discrimination

possible. Likewise, every object is given in an indefinite number of relations, or with an ever-varying content. Thus a given person, *A*, is known as a boy or a man; as meeting us in this or that place, or under these or those circumstances; as wearing a certain style of clothing, or as making this or that remark. Our experience of *A*, and of every object in general, is always particular, and never can be universal. Hence there must be a special cell for each of these special experiences. This overwhelming complexity is overlooked by making the logical universal in each case take the place of the specific experience. But this will not do, for two reasons: (1.) it is a peculiarity of the logical universal that it coexists with the cases subsumed under it, and does not arise from their fusion; and (2.) if the cell represented only the logical universal, we should be unable to recall any of the specific cases. Hence we must have special cells for genera, other cells for the included species, still others for the individuals, and an indefinite number for the myriad contexts in which each individual has been experienced. Thus there must be a cell for color, still others for colors, others again for all possible shades of those colors, and finally a countless number for the myriad experiences with individual cases. When we multiply these by the number of individuals, we begin to get some idea of the complexity of the theory. This must then be increased by the number of possible experiences; for, by the theory, for each distinguishable form and place of every experience, real and possible, there must be a special nervous grouping and movement which can be appropriated to nothing else after the experience has occurred. And even this is not the end, for separate experiences, real and possible, of the same thing, as well as of different things, must have their special grouping; for they are certainly distinguishable, and on the theory this must point to peculiar corresponding grouping. Whatever is distinguishable in mental experience, whether

in space, time, number, quantity, quality, etc., must be based on correspondent nervous differences, and have its appropriate cell. Indeed, it would follow that the cell of a given experience could never represent any other, even of the same class, for that other would always differ in time at least, and generally in many other respects; it would then be special, and must have its special cell.

This complexity may be further illustrated by the facts of language. We must have cells not only for the several parts of speech, but also for every word; and not only for every word as representing an object, but also for every word as a thing in itself. That is, there must be cells for the objects, and other cells for the words, as the two are quite distinct. There must also be cells for the sounds of the words, and cells for the words as written. Take, for example, "through"; there must be a cell for the sound, others for the printed letters, others for the written letters, and still others for their combination. Without the first, we should not understand the word when spoken; without the second and third, we should not recognize the word as written or printed; and without the fourth, we could not spell it. Finally, there must be some kind of nervous grouping for each of the many relations in which this word, as preposition, stands to others.

Again, if we learn a foreign language, a corresponding number of different cells must be produced outside of the tract which represents the words and grammar of our mother tongue. If we should go on, like Cardinal Mezzofanti, who, it is said, spoke fluently in thirty languages, and knew something of seventy-two languages, it would seem as if the language tract would get filled up. Of course it would take a correspondingly great number of cells to represent all this linguistic wealth, and there would be also as many different sets of cells as there were different languages. It is somewhat hard to see what the

difference is between the cells of different words in the same language, but the physical difference between English, French, German, and Italian cells is highly obscure. This complexity has been lost sight of because of the fancy that experience is of the logical universal; and that hence a single cell might represent all the individuals of a class. Probably the theory would never have been held at all by any but materialists, except for this mistake.

To keep the impressions separate is a second point of great difficulty. Suppose a series of impressions on the retina; where are they stored? Not in the retina and the optic nerve; for these perpetually return to a state of equilibrium. Otherwise they could not mediate a knowledge of all visible objects. The impressions, then, are stored somewhere in the brain, probably in some area of the enveloping gray matter. Impression *a*, then, finds its way to a given point in this area, and a cell is formed, or an existing cell is modified. Impressions *b, c, d, e*, etc. follow, and other cells are made or modified. To assume that the nerve elements which receive the several impressions were originally adapted to them alone, would be a monstrous extension of the doctrine of the specific energy of the nerves, and would be a physiological form of pre-established harmony which would likely find no supporters. We should need to suppose, for example, that the word "two" can be understood only by a certain element in the visual area and by a certain other element in the auditory area; and that only on the supposition that these elements have been Anglicized. Yet, without assuming such pre-established harmony, it is not easy to see why impression *a* should be stored in cell *a*, and not in any other cell whatever. It is still harder to see why impressions *b, c*, etc. should turn aside to form special cells for themselves, instead of modifying the results of *a*, and forming a mixed resultant. The original nerve elements were as open to *b, c*, etc. as to *a*; and hence all

the laws of physical action would lead us to expect a resultant impression, in which the plurality and peculiarities of the components should disappear. If this does not take place, we must suppose that, for some inscrutable reason, a given nerve element, when once made the bearer of a mental experience, is thereafter incapable of receiving new impressions. The method of securing this extraordinary result is beyond all suspicion. Of course, this view further implies that the possibilities of experience are being used up, and that all new impressions must be referred to the elements which have not yet been pre-empted.

This implication has been recognized, and the attempt has been made to calculate the probable number of disposable cells, and the resulting range of knowledge.¹

The working of the theory implies that the recurrence of an impression may re-excite the ancient cell; but as the same impressions never recur, but only similar ones with different contexts, it is hard to see how the same cell can ever be re-excited. In some way, however, similar impressions are supposed to betake themselves to the same cells. Hence, a repetition of an old experience must find its way to its proper cell, however many intervening cells of dissimilar experiences there may be. We should expect an in-going impulse to excite all the cells along its track, and thus to precipitate an indefinite number of past experiences upon us. But as this does not happen, we must fall back upon some specific relation between a given impulse and the corresponding cell, so that only the former can excite the latter, and so that the former can excite only the latter. But how this selective action is possible is not clear. It has been suggested that we might conceive of it as the relation of a musical note to a series of stretched cords. In the latter case, a given note is responded to only by the cord which gives that note, while all the others remain

¹ See Bain's "Mind and Body."

silent. But this suggestion only restates the problem, without giving any kind of idea how the thing is done in the brain. In any case, we have to assume a highly mysterious relation between a given impulse and a given cell; whereas absolutely nothing is known which suggests that a given impulse is not adapted to excite all cells alike which may lie along its track. Nothing is known, for example, which suggests that a given word, seen or pronounced, is able to excite only one corresponding cell, and not rather all cells connected with the nervous area in question.

The construction of our complex notions is also a point of great obscurity. Take, for instance, molasses. As having a peculiar odor, there must be a molasses cell connected with the olfactory nerve. As having a peculiar look, there must be a molasses cell connected with the optic nerve. As having a peculiar flavor, there must be a molasses cell connected with the nerves of taste. As having a name which may be both read and heard, there must be a corresponding cluster for both eye and ear. Now how do these several simple cells unite to form the complex notion molasses? It would not do to have them leave their several sensational areas and meet at some central spot; for that would take them out of all relation to the sensory nerves. It has been held that each remains where it is in its own sensational area, and that they are united by lines of nervous connection, whereby an affection of one becomes an affection of all. Of course, anatomy knows nothing of these lines; but, allowing them, they raise more problems than they solve. If there antecedent to experience, we have a physiological pre-established harmony between the brain and the future experience of the individual; and if not there, we must assume that a single experience, which often results in an abiding association, can produce and maintain a line of nervous connection where there was none before. I meet a person in a restaurant. Both per-

son and place may be strange to me. In that case, at least two new cells and a new line of nervous connection must be established, as a result of a momentary experience. Such extraordinary structural changes do not happen elsewhere with such rapidity.

The complexity of this view, again, is hidden by attending only to the logical universal. The general notion with, say, five marks, needs apparently only five cells and five lines of communication; but the particular case is never the universal, but is subsumed under it. Hence, each of the five marks must have an indefinite number of special cases, and there must be a corresponding number of lines of communication all uniting in the class cell. In the same way, all the words and letters of a language must have the most amazing complexity of interlacing. As words they must be linked with their objects, and not only with an object in general, but with an indefinite variety of particular objects. As words, again, they must be variously linked with one another in an indefinite number of phrases. The letters, too, must have their appropriate cells, and each of these cells must be connected with myriad others in the manifold combinations of spelling. It is not plain whether the cell for *t* standing alone is the same as the cells for *t* in "the," "this," "that," etc., or whether there is a special cell for each case; but the complexity is equally great in either case. In the latter, the single letter requires an enormous number of cells; in the former, it requires an equally great number of lines of nervous connection.

Moreover, allowing these lines of communication to exist, the peculiarities of association are far from explained. We have merely explained a possible association, and not the peculiarities of actual reproduction. Thus molasses, again, is given in the greatest variety of contexts. The various kinds and grades of molasses, molasses on bread

or the baby's fingers, molasses in the cruet, the cask, the store, molasses at the boarding-school or in its hygienic relations, molasses in its manufacture, molasses in its relation to sugar or New England rum, molasses in its commercial and international relations,—any of these considerations, and any one of an indefinite number of special cases under each of these specifications, may be suggested by the word molasses. Hence, the auditory molasses cell must be connected by nerve-lines with all these other cells; and since the same effect might have followed if any of the other senses had been excited, all the molasses cells must be in similar connection. But then it is peculiarly hard to see why the stimulus of a given cell should not produce a discharge along all the lines of communication. This is what all physical analogy would lead us to expect; but this is precisely what does not happen. The actual excitation takes place along lines of psychological interest, and these have no physical analogy. The nervous discharge could have no interest in going along one line rather than another, and, unless there be some physical hindrance, must take place along all lines alike. In most cases, withal, there is no discharge on any line, but the mind keeps on its chosen course of thought. Hence, after constructing a theory with great pains, we have the mortification of finding that it will not work without assuming a purely hypothetical set of physical conditions to make it adequate to the effect.

A still more remarkable case of selection appears in the facts of aphasia. It is well known that, in this disease, there is often a progressive loss of the parts of speech. Proper names go first, then the more common substantives, then the abstract parts of speech, as verbs, verbal nouns, and prepositions, and finally the interjections.

This order is what we should expect from the familiar

psychological law, that the strength of association varies with the frequency with which the elements have been conjoined. In the case of persons they are represented in our thought by their image, rather than by their names. In the case of common nouns the same is true, but to a less extent. The abstract parts of speech, on the other hand, are represented only by the word. In their case, then, the strongest association must be established. These facts, then, are not entirely unamenable to psychological law; but they are entirely foreign to any known laws of physical action. On the theory of nerve-cells, we must suppose a curious selection on the part of the disease,—attacking first of all the proper nouns, then addressing itself to the common nouns, and finally, after devouring verbs and prepositions, rooting out the interjections. How such selection is physically possible is not explained. It has been suggested that the parts of speech are put in in layers in the brain-cells; but this only removes the difficulty to the original stowing, and besides creates surprise that the layers should always be attacked by disease in the same order.

The cell theory labors under the following physiological difficulties:—

1. The existence of sensational areas is not certainly established, and in any case they form only a small amount of the gray envelope of the brain.

2. It asserts a specific energy of the nervous elements, either original or acquired, which is opposed to all the indications of physiological research.

3. Hence its assumption of specific nerve cells for each element of sense experience is very doubtful, while the assumption of such cells for every element of thought and feeling is an hypothesis to prove an hypothesis.

4. Assuming these cells, we have next to assume special lines of nervous connection among the cells whose mental

counterparts appear together in consciousness; that is, a second hypothesis is brought in to support the first.

5. Since all associated elements do not always appear together, but now one and now another, we must next assume a series of unknown physical conditions which produce this peculiar result, so unlike the uniform action of physical forces. That is, a third hypothesis is needed to support the other two. Moreover, these unknown conditions contain the whole mystery of the actual result.

6. To keep the impressions separate, either as deposited in the original brain-cells or as represented by new groupings, we have to assume some unknown conditions which do it we know not how. This is an additional hypothesis to prove the rest.

7. The complexity of the theory makes demands upon the brain which there is no reason for believing that it can fulfil.

8. The duality of the brain as a mental organ might compel us to reduplicate the whole intolerable complexity.

9. The facts of aphasia mentioned, and various facts connected with the loss of memory, lead on this theory to the most fantastic and grotesque assumptions.

Finally, if these difficulties were all overcome, we are unable to work the theory without assuming an independent power of reproduction in the mind itself.

It would be insufferably tedious to pursue this theory any further. In itself it belongs to the department of physiological mythology, and was born either of materialism or of an inability to think except in physical pictures. In such cases the mystery of reproduction seems solved when we feign a multitude of cells duly connected with nervous fibres, and grouped into larger clusters. Such external relations of imaginary spatial inclusion and connection have been supposed to account for the unpicturable relations of thought. The same type of mind has found it

easy to explain self-consciousness by supposing the brain molecules to move in paths which return upon themselves; for is not self-consciousness such a recurrent movement? And what is plainer than that the higher forms of mental activity are explained when we suppose their seat to lie higher up in the brain? And yet, perhaps, as profounder forms of mental action, they might more appropriately be located at its base.

The second form of the cerebral theory is based upon the analogy of habit, and escapes many of the gratuitous difficulties of the cell theory. It regards experience as stored in the brain in the form of tendencies, dispositions, facilities, etc. There is no need, then, to provide a separate cell for each experience, but one and the same nervous element may preserve various experiences. Our muscles do not contain their past acts in discrete physical representatives, but rather in increased facility in general, and especially in increased facility in the particular line of action chosen. It would be absurd to look in the musician's fingers for the pieces of music mastered, and it would be still more absurd to seek to determine the range of musical acquirement by the number of the fingers. Individual movements are lost in the common resultant of developed muscular possibilities. Applying this view to the brain, the looking for nerve cells which represent discrete experiences and retain them in their discreteness seems like looking in the athlete's muscles for the separate exercises whereby they have grown to their present facility, or like looking in the vocal chords of a singer for discrete representatives of all the songs sung. Counting the brain-cells, again, in order to determine the range of possible knowledge, seems like counting the strings of a piano to see how many tunes can be played upon it.

This view, though a great relief from the unmanageable complexity and fantastic assumptions of the previous

theory, is itself far from clear. The notion of habit is an obscure one, which cannot be represented in any terms of material movement and grouping. A physical system under the action of physical forces may tend toward a state of molecular equilibrium, as when a bell acquires a finer tone by use; but beyond this, improvement cannot go. This, however, is anything but habit, and such as it is, it depends upon a new grouping of the elements. If now the view in question recognizes nothing beyond the physical elements in the brain, it must base the growing facility on a change of grouping. The elements in general have no habits but laws; and a disposition or tendency which is not the result of some grouping is unintelligible. A pendulum acquires no tendency to swing, a clock-hammer forms no habit of striking. But if we base the tendencies of the brain upon a change of grouping in the elements, we pass back into the previous view. But if we assume some mysterious principle besides the elements which is the ground and subject of the growing facility, we have something quite as mysterious as the soul itself; and something withal which seems no better able to explain reproduction than the soul itself. The assumption of this second mystery throws no light on the general problem. It only explains the obscure by the obscurer. We find a series of activities in the mind which we cannot deduce, but only describe. We seek to explain these by a series of hypothetical activities in a hypothetical something, and are so pleased with our effort as to fail to inquire whether we are any better off than before. In many respects this view is worse than the preceding one. The actual order of association is left even more obscure; for while there might be a concurrent excitation of connected cells, it is extremely hard to get a physical representation of associated "facilities" or "dispositions."

As a result of all these considerations, we conclude that

physiology is not able to construct a theory of representative knowledge which shall greatly advance psychological study. In no case can cerebral reproduction dispense with an independent mental reproduction; and hence, apart from its grotesque and unmanageable features, it is a purely gratuitous hypothesis. The cerebral theory, with its elegant conception of "unconscious cerebration," is a piece of physiological metaphysics which does great honor to the objective method of psychological study.

This conclusion, however, does not imply that the brain has no significance for reproduction; but only that that significance does not consist in being an organic copy of experience. The known facts simply assure us that the state of the body affects the memory, as well as the other forms of mental activity.

The only sense in which the brain can be called the organ of memory is that in which the brain is the organ of thought. This does not mean that the brain does the remembering and thinking for the mind, or that the mind uses the brain to think and remember with; both of these notions are absurd. It means simply that the brain conditions the mental activities of thought and recollection. This simple fact of experience is made the occasion for the fantastic and grotesque whimsies of the cerebral theory, with the result of immensely increasing our difficulties without adding any insight. Nor are we in any way better able to understand the disturbances of memory on the cerebral theory, than on any other. On any theory, these disturbances remain facts which admit of only a hypothetical explanation. For example, a person completely loses his knowledge of a given language. From the psychological side such a fact is confessedly mysterious. We must, then, seek a physiological explanation. But did the cells which stored up this linguistic wealth suddenly vanish, or coalesce? If we attribute it to some

paralysis of the language tract, is it quite clear how such paralysis should confine itself to one language only? And if the cells do not vanish, but are inhibited in their reproductive action by some unknown circumstances, is that view any clearer than the other, that the soul may be inhibited in its reproductive action by untoward physical or mental circumstances?

CHAPTER IV.

THE THOUGHT-FACTOR.

SENSATIONS constitute a first order of mental reaction against external action. These in turn become the ground of a second order of mental reaction. This second order consists in a working over of the sensations into rational forms, or in their interpretation according to certain rational ideas. In this process appears a new factor of the mental life, which we call the thought-factor. We propose to show that such a factor exists, and to consider some of the leading ideas according to which the thought-activity proceeds.

At this point we reach a parting of the ways in psychology. One school claims that sensibility and the primary laws of association among sensations and their representations, account for all that is in the mind. In this view, there is no specific thought-activity as distinct from sensibility, but all the so-called higher mental faculties can be reduced to modifications of the sensibility; and all apparently higher ideas are only modifications, or groupings, of sensation. The primal and only mental reaction is found in the sensations. When these are produced, there is no further mental interference; but they enter into interaction according to the laws of association, and thus produce and fashion the mental life. That is, after the sensations are produced, the mind becomes the passive stage or background across which they move according to laws of their own. As finding the principle of movement and synthesis in association, this school is called the associational school. As viewing experience as the only source of knowledge,

it is called the empirical school. As holding that sensation is the ultimate unit of experience, it is called the sensational school.

Opposed to this school is another, which denies each of the preceding claims. It holds that there is a distinct thought-activity which cannot be reduced to the sensibility, and that there are rational ideas which are forever distinct from sensation. As such, it may be called the rational school of psychology. Further, it holds that experience, though the occasion, and in this sense the precondition, of knowledge, is nevertheless not the only source of knowledge. As holding that the mind can know some things on its own account, it is called the intuitive school. Finally, the mind is not simply the passive seat of mental events, it is also the active ground of many of its own activities.

The sensational school would view all mental movement as an occurrence in the mind; the rational school views some mental movement at least as an activity of the mind.

The distinction between these two schools has a psychological and a philosophical aspect. We may discuss the origin of our ideas and faculties, or we may discuss the grounds of belief. In the former case the claim of the sensational school is, that all our faculties are only phases of the basal processes of the sensibility, and that all our ideas can be deduced from the same source. The claim of the rational school is, that our faculties are not products of sense experience, but factors of our mental constitution without which no articulate experience would be possible. Rationalism further finds the origin of many of our ideas in the mind itself. They exist in the mind as constitutive principles prior to all experience, but are called into action only by experience. In this sense, they are innate. This is the psychological aspect of the question.

When the debate concerns the grounds of belief, the

claim of empiricism is, that experience is the only ground for believing any proposition whatever. The rational school admits this claim for the great majority of propositions; but disputes it for certain others. In some cases, it is held, the mind can transcend its particular experiences, and affirm certain propositions to be universally true on the basis of its own insight. This is the philosophical aspect of the question. Our present concern is entirely with the psychological question.

Historically, sensationalism has been very wavering and unclear in its conception of sensation; and most of its plausibility is due to this fact. We have pointed out that our sensations have a double reference; first, they are referred to the self as their subject; and second, they are referred to external objects as their qualities or as caused by them. The sensationalist is supposed to take sensations as simple affections of the sensibility, which have primarily no reference to anything beyond themselves; but in not a little of his exposition the objectified and rationalized sensation is tacitly taken as the starting point. This inconsistency is to be guarded against. If the unreferred sensation is the beginning, the reference must be deduced; if the referred sensation is the beginning, the sensation itself is seen to involve rational elements, and the view becomes indistinguishable from the instinct philosophy of common sense. We shall take the former view of the doctrine.

The earlier forms of the doctrine regarded the mind as purely receptive and passive. It was compared to a sheet of white paper, upon which experience delivered itself free from any subjective adulterations. This notion was based upon the uncritical fancy that sensations pass ready made into the mind, and without any modification. The doctrine of the subjectivity of sense qualities, however, has entirely deprived this fancy of all credit; and sensationalism has

modified itself accordingly. The mental outfit which it now posits is sensibility and the laws of association; and with these it claims to exhibit all else as their product. This claim is to be examined.

All thought and knowledge rest ultimately upon a process of discrimination, comparison, and assimilation. Even the single sensation is not properly known as long as it is only an affection of the sensibility; for sensation as a state of feeling is not necessarily a clear mental object. A child whose appetite is satisfied, and whose body is comfortably warm and at ease in all respects, is doubtless in a pleasant state of feeling; but it has no rational apprehension of the fact. The dog on the rug and the cat on the hearth are probably very comfortable, but it is doubtful if they can be said to know it. Before the sensitive state can properly become a mental object, it must be discriminated from the self as its state, and set over against the self as its object. And even this would imply only a general objectification of the object, and no definite knowledge. In order to reach an intimate knowledge, the sensation must be classified and related. It is hardly known at all until it is known as one of a kind; and in order to this, it must be discriminated from the unlike and assimilated to the like. Until this is done, we have a feeling without a clearly defined content, and one to which we can give no definite place in our mental system.

The primal and basal short-coming of sensationalism is failure to notice the implications of this fact. Hence it has assumed that to have like or unlike experiences is equivalent to a knowledge of their likeness or unlikeness; or to have coexistent and sequent experiences is to have a knowledge of coexistence or sequence. In general, it is assumed that the existence of relations among the objects of experience is the same as a knowledge of those relations. The likeness or unlikeness of two experiences is supposed

to be identical with our knowledge of them as such. The interaction or association of ideas may then be relied on to integrate like ideas and to dissociate unlike ideas; and this is a judgment of likeness or unlikeness. Experience also gives us experiences in coexistence and sequence, and this is a judgment of coexistence and sequence. Thus the judgment appears as no special faculty, but as a necessary outcome of sensation and association. Association, then, can give us propositions; and by uniting propositions it can give us reasoning. Thus the entire life appears as a phase of the sensibility and the basal process of association.

Unfortunately, this view is too easy and complete to be above suspicion. Let us see, then, where the interaction and association of sensations bring us. Suppose that the sensations of a strong light, a , and of a weak one, b , should arise simultaneously in consciousness. If now they interact mechanically, we should expect them to flow together into a common resultant, c , in which a and b should disappear entirely. When two forces, a and b , act upon a material element at the same time, they have a single resultant, r , in which all traces of a and b have disappeared. This, however, does not take place in consciousness; but a and b remain distinct and unmodified in their content. Only on this condition is a judgment possible. The union of a and b in c would give no hint of the relations of a and b . But how a and b can be kept separate, and at the same time be brought together in the spaceless, partitionless field of thought, is the impenetrable and unparalleled mystery of consciousness. A knowledge of the relations of a and b is reached only as a and b remain separate and self-identical, and as a unitary subject, M , grasps, discriminates, and compares a and b in the same act of consciousness, and thus forms the judgment that a is greater or stronger than b . Out of such an act of comparison may arise a qualitative judgment of likeness or unlikeness, or a quantitative judg-

ment of equivalence, or of greater or less, according to the nature of the objects compared. But this act is not an interaction of the sensations; it is an activity upon the sensations. The utmost that association could do would be to present similar ideas before consciousness; it could not produce the judgment. In short, likeness and unlikeness are not things, and cannot be given in any sense experience. They are not properties of the sensations as such; but are rather ideas which arise when the mind brings its several states into the unity of a single act of discrimination and comparison. However like or unlike our states might be in themselves, the knowledge of their likeness or unlikeness is possible only as there is an activity above and apart from the sensations, which distinguishes them as objects and unites them under the forms of the judgment.

Let us vary the statement. Assume, then, that a, a, b, b, c, c, d, d , are sensations in a purely sensitive mind, and allow that association should form the groups $a a, b b, c c, d d$. Still there is no provision for the perception of the likeness or unlikeness. Each sensation is a particular affection of the sensibility, and cannot even know of its neighbors' existence, to say nothing of its passing a judgment upon them. There is no movement possible until M distinguishes the sensations from itself and from one another, and, bringing them together in an act of comparison, unites them in the judgment of likeness or unlikeness. The sensationist dispenses with this activity by doing the work himself. He, the speculator, stands apart from $a a, b b$, etc.; and, seeing that they are like or unlike, he mistakes his perception of likeness or unlikeness for its perception by the mental states themselves.

Plainly, sensations with reference to that discrimination, comparison, and assimilation upon which knowledge depends, are in the passive mood. They do not discriminate, compare, and assimilate themselves; they are discriminated,

compared, and assimilated. The assimilation possible to association is a concurrent presentation of similar elements; the assimilation which knowledge demands is the recognition of this similarity, and a reference of the elements to a common class. Associative assimilation may have great significance as a condition of rational assimilation, but can never pass into it. The discriminating and assimilating subject must stand apart from the sensational series; and its activity is not an activity of sensation, but an activity upon sensation.

A similar argument is possible for the knowledge of relations in general. Existence in relations is not identical with a knowledge of those relations. Likeness or unlikeness of experience is not an experience of likeness or unlikeness. Coexistence in consciousness is not a consciousness of coexistence. Sequence in consciousness is not a consciousness of sequence. Plurality in experience is not an experience of plurality. The likeness, the coexistence, the sequence, the plurality, may be there; but in order to secure their recognition there must be an activity of the mind upon the objects in question, which shall compare them and affirm the relations in question. Of course, relations could not be established if the things were not in themselves relatable; but this relatability is not identical with the knowledge of the relations. Likeness and unlikeness in general cannot be made by the mind, but only discerned; at the same time the likeness or unlikeness in experience emerges into knowledge only through a special activity above, and upon, the experience.

We conclude, then, that the mental life reveals two entirely distinct processes; (1.) the movements and affections of the sensibility, and (2.) an activity upon them which results in the judgment, the establishment of relations, and thus in rational knowledge. This activity is essentially what we mean by the thought-process.

The existence of an activity above sensation is shown by the most familiar experiences. When an affection of the sensibility is simple, it seems as if the sensation and our knowledge of it were strictly the same; but when the sensation or representation is complex, the difference plainly appears. Thus, when we view a complex but unfamiliar object, we have a complete sensation; yet we cannot tell what we have seen, owing to the failure to establish relations among the component elements of the object. Again, when we look at a large number of objects, or a figure with many sides, we have the same result. The sensation is perfect, but knowledge is lacking. Nor is knowledge possible until the mind has reacted upon the sensation, and by a process of counting and construction mastered its significance. Again, we may pronounce a sentence whose words are all familiar; as, Peter's wife's mother's uncle's sister's husband is coming to see us. In such a case we might be greatly puzzled to identify an understanding of the words expressing the relation with a comprehension of the relation expressed. Nor will any mere staring at the object help us to knowledge. Objects cannot count themselves. The eyes cannot count them. The plurality of sensations constitutes the countable, not the counted. The significance of attention does not consist in an intenser stare, but in a new order of activity, the establishment of relations among the elements of the sense experience. These facts show that sensation may be complete and knowledge be lacking; and they cancel the attempt to identify sensation with the knowledge resulting from it. Indeed, even pathology often reveals these elements as distinct. In the so-called "soul-blindness" the sensitive function is undisturbed, while the rational function is repressed. Finally, our scientific activity perpetually carries us beyond sensations, to a great system of rational construction which was never revealed to sense. But so slovenly

has been the thinking of sensationalism that it has seldom scrupled to adopt the terminology and distinctions of both science and rational philosophy without ever inquiring whether they are possible on a sensational basis. The distinction of primary and secondary qualities is a case in point. This distinction has no meaning for sensationalism; but is borrowed from the opposite view.

We resume the illustration already given. If we regard sensations as a first order of mental reaction against external action, we must regard this knowledge of relations as due to a second order of mental reaction, and one which makes the sensations and representations its proper object. Or, as we regard the external stimulus as the excitant which leads the mind to react with sensation, so we may regard the qualities of sensation in relation to one another as the excitant which leads the mind to react with the thought-activity. But just as the external stimulus produces no sensation except as it affects the peculiar sensitive nature of the mind, so the sensations themselves could never rise into rationality except as they furnish the occasion for the higher mental nature to unfold itself.

With regard to the deduction of the higher from the lower forms of mental activity, sensationalists have always overlooked the ambiguity in the facts of mental development. They will have it that what comes after must be a transformation of what went before; whereas it may be a new and special manifestation of the mental nature in general. This possibility is one we constantly see realized in nature. Cohesion, affinity, repulsion, are not transformed gravity, though they are manifested only after the elements have been brought together by gravity. They are special and irreducible functions of the elements, although conditioned in their manifestation. Before we draw the sensationalists' conclusion, we must examine the new functions and see if they can be regarded as phases of the old ones,

or whether they have special and irreducible peculiarities which compel us to view them as new, though conditioned, manifestations of the mental nature.

Oversight of this possibility has made a large part of sensational polemics quite irrelevant. Great efforts have been made to show that sensations were first; as if this were ever disputed. But a recital of the order of mental development decides nothing as to its factors or the forces which carry it on. An apple tree may live for years before it bears apples, and it may even be hindered from ever bearing; yet that does not prove that apples are the outcome of the tree's experience apart from any determining law in the tree itself. Temporal sequence in either physical or mental development does not decide whether the new fact is a transformation of the past or the manifestation of an immanent law.

But this notion of a transformation of mental elements rests upon an implicit hypostasis of mental states. As was pointed out in treating of the simplicity of sensations, sensations are tacitly viewed as self-identical things, or as a kind of mental raw material which may be made into a great many mental compounds, while at the same time they remain self-identical and never leave the plane of their own sensational nature. But this fancy disappears when we see that sensations are simply mental functions. There is no mental stuff in them which admits of transformation; and we might as well regard the later notes in a melody as transformations of the preceding ones, as view later mental states as transformations of their antecedents. A replacement of one form of function by another is all that is possible.

When, then, sensations *a, b, c, d* are followed by a new form of mental action, it is absurd to view the latter as a phase of the former. We can only regard it as a new reaction of the mind against its sense experience. But in

order to do this the mind must be more than sensitive. In a mind whose nature is fully expressed in the sensations a, b, c, d , there is no assignable reason for movement; just as in physical elements whose nature is fully expressed in the law of gravitation there is no possibility of chemical combination. Advance becomes possible only as along with a, b, c, d we assume a nature, X , for whose unfolding a, b, c, d are but conditions. That X contains the law of the movement and its assumption, can never be escaped. Indeed, this is true for the different classes of sensations themselves. There is no way of deducing sensations of sound from those of light, but for each class we have to assume some peculiar endowment of the soul. That they are classed together as sensations in no way removes their absolute difference. Classification neither makes identity nor abolishes distinction.

Thinking proceeds by distinction and comparison. But there can be neither distinction nor comparison in general. Both processes imply some common relation under which the objects are subsumed; and this common relation alone makes them possible. Things can be neither like nor unlike in general, but only in some common relation, as quantity, quality, number, space, time, dependence, etc. Things which are alike are such in some respect common to both. Things which are unlike are such in some relation under which they are subsumed. This common relation the scholastics called the *tertium quid comparationis*. It is the necessary implication of every act of comparison and discrimination, and hence of every judgment. The judgment is an affirmation of relation under some of these general heads. Thus, all mathematical judgments express some relation under the general notions of figure, number, and quantity. Attributive judgments depend on the conception of substance and attribute. All judgments which affirm a dynamic dependence of one

thing on another come under the general relation of causation.

It is oversight of this fact which underlies most of the satisfaction and dissatisfaction felt with the statement that thought is only an activity of discrimination and comparison. The sensationalists have rejoiced in it, and many others have grieved over it. The truth is that the joy is entirely misplaced, and the grief largely so. For if objects may be distinguished as cause and effect, substance and attribute, reality and appearance, we bring in the whole apparatus of the rational philosophy through the very door opened by the sensationalists. It is, then, only a question whether some few judgments may not be better described as the bringing of a given subject directly under the head of the relation. The normal ideas are equally necessary in either case. The sensationalist gains nothing; and for the intuitionist it must at last reduce to a question of expression.

Hence a study of the thought activity demands some notice of those general relations which thought finds, or establishes, among its objects. They have been variously called the categories of thought, norms of distinction and comparison, regulative ideas, etc. Some of these expressions may be better than others, but the meaning is the same in all.

We proceed to notice the leading relations under which knowledge is constituted. Our inquiry, however, will have to do with their psychological nature and origin, rather than with their metaphysical significance.

Likeness and unlikeness are not independent notions. They always demand for their understanding some general relation with reference to which the likeness or unlikeness exists. Things may be like or unlike in form, or quality, or quantity, or function, etc., but they cannot be like or unlike in general. Moreover, these ideas admit of no

definition in their essential elements ; that is, what they mean can never be told, but only experienced. All that can be done in the way of communicating them to another is to prescribe a certain form of mental activity, in the hope that as the result thereof the other will experience in himself the meaning we seek to communicate.

These ideas arise only as two or more experiences or objects are at once discriminated and compared in the same act of consciousness. When this act, which cannot be construed or further described, is performed, then there arises the idea of likeness or unlikeness, according to the nature of the objects. In particular, qualitative likeness and unlikeness admit of no description. Quantitative likeness and unlikeness are perceived when two or more cases of a common quality are compared. Here the mind comparing two or more cases perceives a peculiar identity or change in its inner state as it passes from one to another, which change, moreover, is reversed when the order of mental movement is reversed. This fact is the basis of all ideas of quantitative equivalence, or of greater and less in quantity. But these ideas, though ultimately based upon the sensibility, are not functions of the sensibility. They rather represent a new and higher form of mental function.

The process just described is the one by which the mind proceeds in all classification and division. In this way arises all that we mean by general or class notions. Given experiences or objects are discriminated from others unlike them, and assimilated to others like them ; and thus the notion of classes is reached. The claim is often made that class notions arise through purely associative assimilation ; but we have already seen its untenability.

Time expresses an order of relations which can be understood only in terms of itself. All the various definitions of it either imply it, or are other names for the same thing.

Metaphysics finds reasons for doubting the existence of time as an independent reality in which events occur; but the psychological question as to the origin and function of the notion is independent of the metaphysical theory. However real time may be, the subjective origin of the notion will be the same as in the ideal theory; and however ideal time may be as an existence, its actual function in our mental life will be unchanged.

No inspection of consciousness will reveal to us the origin of this idea, inasmuch as the idea is always there long before the reflective consciousness begins the inquiry. We can only study some of its logical conditions. Whence comes the idea of time?

A first suggestion might be that time is a quality of all mental states from sensation on; but this would be a mistake. For time, considered as the relation of antecedence and sequence, is not a quality of mental states at all. It is a relation among them which in no way affects their qualitative character; and this character, in turn, in no way determines the temporal relation. The two are conceived, even by common sense, as mutually indifferent. But if we say that time, as duration, is a quality of all mental states, the objection meets us that duration is an utterly impossible idea apart from an assumed sequence of temporal moments.

The next thought of common sense, and the traditional doctrine of sensationalism, have been that the simple sequence of sensations is identical with the idea of sequence; and then by abstraction from the sense experience we get the notion of time as a whole. But this is only the traditional error already referred to, namely, that relation among the objects of knowledge is the same as a knowledge of their relation. In fact, however, a sequence of ideas is so far from being an idea of sequence, that, if there were nothing but the former, the latter could never arise.

The reality of sequence does not help us to a knowledge of the same. If we assume a series of sequent activities in the outer world, and assume further that these affect us, still we provide only for a sequence of ideas, and not for an idea of sequence. If *a* should vanish from consciousness and *b* should appear, there would be a succession of *a* and *b* in consciousness, but no consciousness of succession. Or if we should assume that consciousness is an inalienable quality of *a* and *b*, this consciousness does not provide for a consciousness of the temporal relations of *a* and *b*; in order to this, we should need a consciousness of a second order.

Memory and self-consciousness are necessary conditions for the emergence of the ideas of time. There is no reason for thinking that in a changeless state the idea would ever arise. Where all changes, the idea is impossible. Where nothing changes, the idea is equally impossible. This union of the changing and the changeless is given in self-consciousness, where the abiding self as given in memory is contrasted with its changing states. Until this is done, there may be a sequence of states, but no knowledge of this sequence. If we seek to get the idea from the fact that some elements of consciousness are fixed compared with others, and thus give use to a fixed background upon which the temporal sequence may be projected, we merely fall back again into the old error of mistaking sequence of ideas for an idea of sequence. No relation of the elements of consciousness among themselves can give the idea; they can only furnish the occasion for its development.

This reference to memory, however, does not quite reach the root of the matter; for while memory serves to bring the idea into consciousness, memory in turn implies time. Memory becomes properly such only as its objects are given in temporal relations. Apart from these, memory

is only a reproduction of experiences without any hint of our having had them previously. Nor will association in any way help us. This, too, could only give us the sequence of ideas, and not the idea of sequence. There is nothing to do but to declare that the time idea rests ultimately upon an original and peculiar mental principle, whereby it connects its experiences under the special form of sequence. To return to a previous statement, the conception of sequence would be impossible if there were only a sequence of conceptions. All the conceptions which enter into a perception of sequence coexist in one form or another in the present consciousness. That which constitutes their temporal order is not any existing succession, but the peculiar form of their relation within the field of consciousness. Hence the act of consciousness by which relations of sequence are grasped must itself be without any temporal distinctions in itself; and in this sense the consciousness of time is non-temporal. All knowledge of the past is in the present. All ideas which represent the past are in the present. Their actual relation in the mind is not a temporal one, but rather a peculiar and unpicturable order of connection, to which consciousness gives the form of antecedence and sequence. This does not deny that there may be a real temporal order in the world outside of us; it only expresses the conditions of our becoming conscious of a temporal order.

These conditions may be summed up as follows: (1.) Change in consciousness; (2.) Identity of the conscious subject; (3.) A comparison of this change with the abiding subject; (4.) A relation of the objects of experience under the form of antecedence and sequence. It must be borne in mind that these conditions decide nothing as to the psychological history of the idea. It is not meant that the idea emerges full-fledged upon the first act of comparison. It is possible that sensations may come and go for

a long time without evoking the idea; and when it is evoked, it will appear, not in a general and abstract form, but in a concrete and confused application. But whenever and however it may come, it must come from within.

Kant held that the idea of time depends on the idea of causation; because a series can exist only as the position of its members is determined, that is, caused. There seems to be here a confusion of the series as occurring, and our temporal apprehension of it. The series as occurring is possible only through the fact of causation; and our thought of it as occurring demands for its completion the notion of causation. But our temporal apprehension of the series need contain no trace of the causal idea, as especially appears from the fact that in inductive science our determination of causation is always successive to the determination of temporal sequence. It is the latter which suggests the former.

It is important to make clear to ourselves that this fundamental relation of antecedence and sequence cannot be reached by any process of abstraction. Objects cannot exist for the mind in a temporal relation until the mind by a special synthesis or act of relation has put them into temporal relations. It is this synthesis which constitutes the temporal series for us. Objects may possibly exist in time apart from our minds; but in order to exist in time for us the external synthesis must be internally reproduced, and this is possible only as the successive experiences excite the mind to unite them under a temporal form. Hence, all that the abstraction could give us would be the form of the synthesis after it has taken place, or the law which governs it.

Psychologically, time, then, is primarily the law or principle which compels the mind to connect its experiences and all conceptions of events in general under the form of antecedence and sequence. Secondly, time is the form

of this synthesis. As applying to all events alike, no matter what their qualitative difference, this form of synthesis may be called universal. As belonging to the laws of the mind itself, it may be called *apriori*. At the same time it can have no significance apart from experience, and, like all mental functions, is first excited by experience. What we get when we drop the experienced content and seek to abstract the pure notion of time, is simply the law or form of the synthesis. This form, moreover, because applicable to all events, contains no limitation in itself. Like a recurring series in numbers it has no stopping place, and hence seems limitless. In this way the notion of time without beginning or end arises. No event can be conceived which cannot, or must not, be brought into temporal relations. Empty time, or pure time, is merely the phantom of this form of synthesis. The all-embracing time means really an all-embracing formula.

The unity of time arises in the same way. All the objects of experience, and all events actually occurring, are united together in a common series; and hence they are said to occur at various moments of one and the same time. But we often give the temporal form to mental objects, without thought of any relation to cosmic time. Thus the development of a drama, or of a story, or of our private castle-building, takes place under the form of time; but this time of the imagination has no relation to the time of reality. It is the unity and continuity of the world-process, real or imagined, which constitutes the unity of time.

Temporal relations cannot be pictured. All attempts to picture them rest upon misleading space images. Time is figured as a line, or as a moving point, and even as a limitless sphere, which contains both things and events; but all of these conceptions are borrowed from space, and are incompatible with the idea of time. All the parts of a line

coexist; but the time line exists only in one point, the present. The moving point, again, implies a space in which to move. The spherical time coexists in all its parts, and thus the idea itself is denied. It only remains that time must be understood in terms of itself. It is the one bond of relation whereby all events, both in the inner and in the outer world, are bound together; and the establishment of temporal relations is one of the first steps toward that unification of its objects which is the supreme goal of intelligence.

Psychological time may be regarded as reproducing in thought a temporal order objectively existing. The consideration of this question belongs to the theory of knowledge; and the nature of this objective time is a problem for metaphysics.

Space is a leading category in external perception. The objects of perception become such only as they take on spatial forms and enter into spatial relations. This category, with its implications of extension, direction, and distance, seems at first so clear and self-satisfying that no question can be raised about it. Things are in space, and we know them directly as such. But this self-evidence disappears on reflection. Things are known only through the sensations which they produce in us; and how can we pass from these sensations to the notion of things extended in space? Moreover, sensations are in perpetual flow; how can we pass from their constant change to the changeless relations of space? Whence comes the idea of space?

Several answers are given: (1.) It is held that things are immediately known as extended and in space. (2.) It is held that the sensations themselves are extended and external to one another, and that we simply recognize the fact. From a knowledge of them as extended and mutually external we pass by experience to our general knowledge

of space. (3.) Space is viewed as a mental principle which compels the mind to give its objects space forms and space relations. Just as the reaction of the mind against nervous action with sensation is due to the nature of the mind, so the intuition of these sensations under the form of space is also due to the nature of the mind. (4.) The associationalists generally deny all of the previous views; and claim that the space idea is simply a consequence of the laws of association working over sequent sensations. Time relations alone are primal; space relations are derivative.

This question cannot be settled by inspection. The idea of space, like that of time, is produced long before reflection begins. Nor is it possible for us by any combination of activities to watch the actual unfolding of the idea. In the case of number, we can inspect the process. The mental function by which number is generated can be performed at any time; but the birth of the space idea is far more obscure. Our study must necessarily be indirect, and must consist mainly in examining the solutions of the problems proposed. We begin with the associational theory.

This view does not claim to recognize space relations in the sensations, or in their relations as states of consciousness, but seeks to deduce them from simple experiences of sequence. Herbart in Germany and the sensationalists in England have both claimed that a being capable of having sensations and representations in time must develop the idea of space. It is not always plain whether the deductions are meant to explain a knowledge of space as a reality, or only the development of the idea from non-spatial elements without any reference to its objective reality or ideality. In fact the sensationalists differ on this point. Some are pronounced idealists, and deny the reality of space altogether; others allow its reality, either

in a knowable or unknowable form. The average sensationist rarely raises the ontological question, but confines himself to showing, as he conceives, the true origin of the idea of space. But, with all these ontological differences, their psychological theory is essentially the same. As good an argument as any for their view is the following, by Mr. J. S. Mill.

"Suppose," he says, "two small bodies, A and B, sufficiently near together to admit of their being touched simultaneously, one with the right hand, the other with the left. Here are two tactual sensations which are simultaneous, just as a sensation of color and one of odor might be; and this makes us cognize the two objects of touch as both existing at once. The question then is, What have we in our minds when we represent to ourselves the relation between these two objects, already known to be simultaneous, in the form of extension or intervening space,—a relation which we do not suppose to exist between the color and the odor?" Mill next points out that the peculiarity is that in passing from A to B a series of muscular sensations must intervene, and continues: "When we say that there is a space between A and B, we mean that some amount of these muscular sensations must intervene; and when we say that the space is greater or less, we mean that the series of sensations (amount of muscular effort being given) is longer or shorter."

"The theory may be recapitulated as follows: The sensation of muscular motion unimpeded constitutes our notion of empty space, and the sensation of muscular motion impeded constitutes that of filled space. Space is Room,—room for movement; which its German name, *Raum*, distinctly confirms. We have a sensation which accompanies the free movement of our organs, say, for instance, of our arm. This sensation is variously modified by the direction and by the amount of the movement. We have different

states of muscular sensation corresponding to the movements of the arm upward, downward, to right, to left, or in any radius whatever of a sphere of which the joint that the arm revolves around forms the centre. We have also different states of muscular sensation, according as the arm is moved *more*, whether this consists in its being moved with greater velocity, or with the same velocity during a longer time; and the equivalence of these two is speedily learned by experience. These different kinds and qualities of muscular sensation experienced in getting from one point to another (that is, obtaining in succession two sensations of touch and resistance, the objects of which are regarded as simultaneous) are all we mean by saying that the points are separated by spaces, that they are at different distances, and in different directions. . . . It appears to me that this doctrine is sound, and that the muscular sensations in question are the sources of all the notion of extension which we should ever obtain from the tactual and muscular senses without the assistance of the eye." ¹

This argument has been given at much greater length by other writers, especially by Bain and Spencer, yet without adding anything to its real strength. In particular, attention has been called to the possibility of association between the various series of sensation, visual, tactual, and muscular, so as to produce a coexistence of different orders of sensation as well as a coexistence of sensations of the same class. But these suggestions only make it easier to confuse ourselves; they in no way advance the argument. We begin with a criticism of Mill.

There is a fundamental unclearness running through this exposition which makes it uncertain whether these sensations are the idea of space, or produce it. Both possibilities run along in indefinite oscillation, so that either seems to

¹ Examination of Sir William Hamilton's Philosophy, Vol. I. pp. 280-282.

be on the point of becoming the other. We must discuss them separately.

No sensations, muscular or otherwise, are capable of originating the space idea. The apparent success of Mill's attempt is due entirely to the space implications of the terms used. Thus we have "direction," "movement," "velocity," "upward," "downward," "right," and "left." A and B, also, are spoken of as coexistent bodies, and sufficiently near together to be touched by each of our hands respectively at the same time; and we are supposed to pass back and forth from one to the other. Of course, if all of these terms are understood in their spatial significance, it would be very easy to deduce the idea from the experience described, for we should have the idea already in a state of high development. If now we do not propose to beg the question, we must carefully eliminate all these terms. We know nothing of movement, or velocity, or direction. We must not assume that A and B coexist in space or in mutual externality; for this would beg the question. Coexistent and sequent sensations, like or unlike, are all that is given. If there be sensations attending movement and change of direction and velocity, they are not yet interpreted by the notions of movement, direction, and velocity; all this is to be deduced. Hence, when we speak of passing from A, all we can mean is that the sensation A ceases to exist, and our return to A can only mean the recurrence of a similar sensation. To assume that it is a movement to and from a fixed object, A, which coexists with another fixed object, B, and which is external to it, would beg the question. We should be seeking to deduce the idea of space from muscular sensations, which, however, arise from certain movements known as movements between two bodies known to coexist in mutual externality. It would be strange, indeed, if such a deduction were not victoriously successful. But when we are

careful to deny ourselves the luxury of begging the question, it turns out that we never get beyond coexistent and sequent sensations in time.

Nor are we in any way helped by the suggestion that association may unite various temporal series together, so that the tactual, the visual, and the muscular series may even seem to coexist in consciousness, and to have lost their sequent character altogether. Such coexistence is still a temporal coexistence. Of course, after long dwelling upon this coexistence, we might suddenly remember that space itself is an order of coexistence, and fancy the problem solved. But verbal ambiguity solves nothing.

Another suggestion is, that some temporal series admit of inversion; and thus we reach a differentiation of the spatial from the temporal. Thus, by turning our eyes from right to left, we get a given series of sensations; by turning them from left to right, we get the same series reversed. The same is true for touch. We can touch a series of objects in a given order, and then reverse it. But this reversibility is what distinguishes the spatial series from the temporal. Unfortunately, this inversion is impossible without the space idea; or rather, such inversion as is possible in a time series is of no use in reaching a space series. In such a case we have no turning back of the temporal series upon itself, but simply a repetition in the series of sensations similar to those which occurred before, and in an inverted order, as when we sing the scale up and down; but the temporal series goes ever onward and never backward. Singing the scale up and down forever has nothing in it to turn a temporal into a spatial order. The cloud of words may be never so great or so dense, yet, after all, when the question is not begged, we do not advance one step beyond temporally coexistent and sequent sensations. There is nothing to do but to admit that the space order cannot be deduced from the time order, or else to identify

the space order with certain forms of our temporal and sensational experience.

This is the other view mentioned as contained in Mill's argument. "When we say that there is a space between A and B, we mean that some amount of these muscular sensations must intervene." This would imply, not that muscular sensations produce the idea of space, but that, when associated, certain tactual sensations are the idea of space. This is the utterance of despair. The idea of space refuses to be identified in any way with any kind or amount of sensation. Sensations may serve as a measure of space, and they may furnish the conditions under which the idea is educed; but no identification is possible. To see this, one need only attempt to enunciate a geometrical proposition in terms of sensation. Thus, that the square on the hypotenuse is equal to the sum of the squares on the other two sides, would be fairly hard to translate into terms of the relations of different groups of sensations. A geometrical representation of the square root of two is not hard to understand in space terms; but it would require the greatest penetration to identify it with sundry temporal sensations, whether coexistent or successive.

There is plainly no hope of deriving the idea of space from sensations which merely coexist, or succeed one another, in time, and it is plainly absurd to identify space with sensation; but a third possibility remains. We may suppose that the ideas, instead of mechanically cohering, chemically modify one another, and thus produce a mental result quite unlike its antecedents or components. There is a chemistry of ideas which produces, not merely external juxtaposition, but qualitative transformation. The following difficulties exist in this view:—

1. The chemistry of ideas is a happy phrase, which expresses the theory so effectively that there has been a surprising failure to show that it is anything more than a

phrase. In truth, however, there is no corresponding fact. The chemistry required is one which would modify, not the psychological completeness or intensity of the mental function, but the logical content of the idea; one, for instance, which could turn a sensation of color into a sensation of odor, or the thought of a triangle into the idea of justice. The only illustration ever discovered of this extraordinary process was mentioned by James Mill, and it has been hard worked ever since. This is the case of white light, which is supposed to result from the fusion of the other color sensations. Unfortunately, this fusion does not take place in consciousness, but in the nerves. The several nerve processes unite into a resultant process which has white light for its sensational attendant, just as other processes have other colors for their sensational attendant. And even if this were not the case, we should be no better off; for this fusion does not give us a new class of sensations, but only another sensation in a class already experienced. We conclude, then, that there is no such chemistry as the theory demands; and if there were, it would bring our thinking to an end. Thought rests, as we have seen, upon the fact that the logical contents of ideas shall remain unchanged in consciousness.

2. Further, allowing such a chemistry, how shall we interpret it? Even chemistry knows nothing of the change of one simple element into another, but only of the union of simple elements into molecules. The elements do not produce a molecule as something distinct from themselves, but a certain grouping of elements is a molecule. Following this analogy, then, we should have to say that simple sensations may be combined into mental molecules which represent new ideas. At the same time, the simple sensations exist in, and constitute, the mental molecule. They do not produce it as something distinct from themselves, but a certain combination of temporal sensations is the

new idea. Thus the attempt to follow out the chemical analogy brings us out where we went in. By hypothesis, the only elements in combination are temporal sensations; and the analogy appealed to compels us to say that a certain grouping of these sensations is the idea of space. It might also be difficult to work the theory without assuming special affinities in the sensations for the peculiar form of synthesis supposed to result. A universal synthesis like that of space cannot, of course, be referred to accident; and if the sensations always take on this form there seems no way of explaining it except by assuming some occult affinity in the sensations themselves for this peculiar form. This would differ from the Kantian view only in the location of this determining principle. Kant would put it in the mental nature itself, where it would be of some service, while this view would put it in the sensations, where it would be of no use; for the utmost such a principle could do would be to bring the sensations into relations; it could never account for our knowledge of them in those relations; and this is the knot of the problem.

We shall never get on unless we allow the sensations to produce new ideas. We may conceive this production in two ways. When the sensations a, b, c, d , etc. have come to coexist in consciousness, we may suppose (1.) that a, b, c , etc. disappear, and are replaced by S ; or (2.) that S arises in consciousness when a, b, c , etc. are given, yet without displacing them. But in neither of these cases do a, b, c , etc. appear as the sufficient ground of S , but rather as the conditions under which the mind produces the new idea S . For a, b, c , etc. are not things, but mental states; and the fact that they exist in the mind can never be a reason for the occurrence of anything new, unless we assume a complex mental nature, which causes the mind to react upon them with the new and peculiar function S . The sensations themselves are subject to the law of iden-

tity; and the ground and direction of their movement must be sought in the soul itself. But this leads us out into the apriori view, that the space idea results from some special principle within the soul itself, and not from any interaction of sensation.

The association of temporal elements will not give us space. The alleged deductions of the idea are sorry enough. They owe their force either to the space terms employed, such as movement, velocity, and direction, or to ambiguous terms, which may be referred to either space or time. Examples are "coexistence," "series," "position," "coexistent positions," and "serial lengths." These are above all price in the deduction. By hypothesis, their temporal significance is the only one employed; but the spatial meaning gets itself recognized betimes. It is on this broad neutral field of verbal ambiguity that the transformation of time into space occurs.

The construction of the space idea from temporal elements is a failure. We have next to consider the claim that sensations themselves are extended and mutually external. This curious view arises from confounding sensations as mental acts or functions with sensations as objects. After our sensations are referred to the surface of the body, or to different parts of the body, or to a world of external things, it does not seem absurd to speak of them as extended and spatially related. But until this objective reference is made, the sensations show no signs of spatial properties. As mental states, they are neither before nor behind, neither above nor below one another. No more are they round, or square, or crooked, or cubical. These spatial relations and qualities have significance only as applied to objects, and not to sensations. The identification of sensations as acts with sensations as objects, is like the identification of our ideas as mental acts with the objects meant. We must say, however, that the thought

of sugar is not sweet, that of vinegar is not sour, that of the triangle is not three-cornered, and that of size or form has neither size nor form. The only intelligible meaning of this view is, that our sensations make us immediately cognizant of extension, not in themselves, however, but in the organism, or in extra-organic objects. In this form the view does not differ psychologically from the common view, and may be criticised along with it.

We return to the view of common sense, according to which things are extended and in space, and are immediately known as such. If this were admitted, it would not solve the question of the psychological origin of the notion of space, or of how our knowledge of this real space arises. The mere existence of a thing does not explain our perception of it; and this implies the further statement, that the existence of a thing as such or such does not explain our perception of it as such or such. To be perceived, a thing must act upon us; and to be perceived as this or that, it must act upon us in a manner corresponding thereto. But space itself and space relations do not act upon us; only things can do that. Hence, our knowledge of space and space relations must depend on the activities of things. But whoever will consider the physiological processes which mediate perception will see that they have no likeness to the things and space relations which we are supposed to perceive through them. They are as little alike as the written word is like the idea, or as the electric changes in the wire are like the message sent. Hence, if there is to be a recovery of the original forms of external existence, it can only be as the nervous processes affect the mind, and cause it to read them back into their objective meaning. But this mental reconstruction must be according to laws inherent in the mind; for the raw material is totally unlike the pattern according to which it is to be woven, and the mind has nothing but this raw material.

and itself. The immediate antecedents of perception are totally unlike the things and relations perceived. Hence, if the mind had no inherent tendency to bring certain of its objects into space forms and space relations, the knowledge could never arise, no matter how real space might be.

To escape this admission, various devices are resorted to. Thus, the claim is made that the extension of the body implies necessarily the perception of extension. When, then, the branching of the nerves over a certain surface of the body is shown, as in the eye, and skin, and nerves of touch, this is supposed to explain at once the knowledge of extension. This view has the following difficulties:—

1. Our perception of extension is never of the extension of the nerves, either of their inner or outer endings. If our perception of color were really a perception of the packed rods and cones of the retina, the sensation would be coarse-grained and discontinuous to correspond; and the blind spot would appear in the extended color.

2. The external arrangement of the retinal picture is entirely lost, so far as we can see, in the optic nerve; and there is not the slightest ground for supposing that it is ever restored. The picture formed on the retina is not transmitted to the brain. Of the space relations of the central elements whose action mediates vision, we know nothing. The same is true for the other senses. The peripheral arrangements of parts finds no reproduction in the central organs; and if it did, we should have the same coarse-grainedness of extension which we should have from an immediate consciousness of the retina. There is no absolutely continuous extension in reality, whether of the nerves or of extra-organic objects.

3. But, overlooking these difficulties, we are no nearer the idea of extension than before. We have simply the perennial confusion of existence in relations with a knowledge of the relations. On the theory, we should have sim-

ply a lot of nerve-endings side by side. But since we know nothing of these nerve-endings except very indirectly, and, in fact, know almost nothing of them in any way, it would be absurd to try to derive our knowledge of extension from the knowledge of their extension. And yet the fact of their extension in space can be no reason why a knowledge of their extension should arise in the spaceless field of consciousness. Their effect upon the mind is not extended, but varies only in quality, intensity, and duration. These, however, are not extension; they can only furnish the incitement for its mental development.

Relief has been sought from this difficulty in the notion that the mind itself is extended. Some have supposed that the mind, as a kind of ethereal essence, fills out the body, and comes in direct contact with the surface of things. Others think that the extended nervous surface, at least, is connected with an extension of the soul. In both cases, the physical extension acts upon a mental extension, and thus the mystery is solved. Some have even gone so far as to affirm, that a perception of the extended by the unextended is a contradiction. This final fancy rests on the whim that the perceptive act has the properties of the thing perceived. The thought of extension is extended, and hence the soul must be extended to hold it. Of course, the thought of infinite space must be very bulky, and the mind must be correspondingly large to contain it. Apart from this whimsey, the doctrine only helps the imagination. When we suppose a series of impressions on an extended soul, it seems as if the mystery were explained. But, first, we know nothing of such impressions; and, second, if such impressions existed, the knowledge of them in their space relations would not be explained. Space relations can exist for knowledge only as the mind brings its objects into those relations. Just as a special synthesis is needed to bring out the idea of time, so also another special synthesis

is needed to bring out the idea of space, and to put objects into space relations.

The view we are criticising rests also on the assumption that extension is an idea which can be passively imported into the mind without any constructive activity on the part of the mind. But in truth all perception of extension rests on a synthesis of parts. The parts may exist in objective synthesis, they can be known as spatial only through a subjective synthesis corresponding thereto. When the object is large, we can detect this activity very clearly. Then our vision runs around the object, drawing its outline, and gathering up the successive steps in a single form and image. Nor can there be here any thought of a simple gaze at a physiological image, for no such thing exists for consciousness at all. The extension we see is the extension we construct.

But even this need not be insisted upon. We may admit that the mind has a direct experience of extension in sense experience and even an experience of extended objects, and we should still not be in possession of the idea of space; and if this were all, we should never reach it. For this idea embraces not merely the extension of separate objects, but also, and more especially, the relating of these objects in a common space. It is this vast network of relations among objects and positions in space which constitutes the essential content of the idea of space. Objects may suggest their existence, but they are not necessary to their existence; and after the mind has come into possession of the space idea, it can develop out of itself myriads of ideal relations which have never been realized. Now the simple experience of extended objects contains no account of this. There would be nothing in such experience to bring those objects into further relations. They would be alike as to extension, but they would not exist in a common space. The bare fact of being all extended would be compatible

with existence in separate and incommensurable spaces; just as the products of imagination and dreams exist in unrelated spaces. Nor can they come into a common space until the mind brings them into it. By its unifying and co-ordinating activity it must assign each object its place in a system of space relations; and until this is done, thought has not reached the unity and community of space. We know that all things are in one space, only because we relate all our objects in a common scheme of intuition, and according to a common rule. This locating and co-ordinating of its objects in a common intuition according to a common principle is the essential space activity of the soul; and it is the expression of an inherent mental principle, which the mind brings to its objects rather than finds in them. And, as we have just said, after the mind is in possession of the space intuition, it may proceed in entire abstraction from all objects, on the basis simply of its own conceptions and intuitions. In this way the science of geometry in all its forms is built up. The propositions of this science are not learned from experience nor can they be tested by experience. They are evolved from pure spatial intuitions and are tested by the same.

This conception of the space activity as a peculiar form of relating a plurality of objects throws further doubt on the assumed possibility of a simple, or passive, consciousness of extension. For if the notion of extension involves a relation of different parts as inner and outer, right and left, top and bottom, or a distinction of points as adjacent and separate, then consciousness of extension is impossible without a special relating activity of the mind.

The difficulty with the associational theory is, that it either begs the question, or else, instead of deducing the idea of space, calls certain associations of temporal sensations space. The difficulty with the common-sense theory is, that it assumes that the existence of extension in the

organism and in external objects accounts for our knowledge of the same, and overlooks the fact that objects can exist in space relations for the mind only as the mind brings them into such relations. That which makes the common view so clear is the complete oversight of all the conditions of perception, especially of the fact that perception is mediated by a complex and highly mysterious nervous activity, in which no trace of likeness can be found, on the one hand, to the external things and their relations, and, on the other, to the resulting knowledge. In the failure of these views we turn to the theory which holds that the origin of the idea of space is not to be sought in sensation or in sense experience, but rather in the nature of the mind itself.

This view regards our sensations, considered as mental states, as having no spatial properties whatever. However produced, they differ in themselves only in quality, intensity, duration, and time of occurrence. As in painting, distance, size, and the third dimension are replaced by light, shade, and perspective; or as in actual perception, the same elements of distance, etc. are replaced by varying shades of color and clearness of outline; so in this theory, all spatial relations vanish from the sensations, and are replaced by varying shades of quality and intensity of sensation. In the case of the picture the shaded pigments lead the mind to construct the object; and this it does so spontaneously that we seem to see the very object itself. It requires more effort to see what the eyes really give, namely, a mass of colors on a flat surface, than to see the spatial significance of the whole. In the case of perception, again, the spatial interpretation is so rapid and spontaneous that we seem to see size and distance immediately; and it even requires a considerable power of analysis to see that this is not the case. What is partially true in these cases is regarded as strictly true in the theory in question.

Space relations of every kind are replaced by non-spatial representatives. These, however, excite the mind to give to its objects space forms and relations, just as the light and shade on the canvas excite it to construct for itself the corresponding objects under the forms and relations of space. But just as the light and shade in the picture can never take on their objective significance again unless an interpreting mind appear, so also these non-spatial qualities of sensation will never again acquire a spatial significance unless the mind whose states they are gives it to them by projecting them as objects under the forms of space.

What is the essential element in this process? In our mature thought, we possess the idea of one all-embracing space; and all space terms seem to imply this as their condition, or to be specifications under it. Nevertheless, we must regard this idea as second, and not first. The essential factor is the synthesis of objects in space relations without any original reference to the unity or infinity of space. Space may be one and infinite, but it is not originally given as such. We begin by representing space only in such extension as our actual sense experience calls for, and it is only at a later period that the conception of the unity and infinity of space arises. The form and law of the synthesis are first; the unity is even conditional upon the nature of the object. The spaces in which dream objects appear have nothing in common with real space or with one another. So also the space in which imagination constructs its objects is not a part of the space in which we suppose the real world to exist. I may represent successively a series of geometrical figures in thought, but they exist in no common space, and least of all in the space of external perception. Here we see the form and law of spatial synthesis active, yet without any suggestion of either unity or infinity. Kant's claim that all spaces must be

conceived as parts of one and the same space, is true only for the space in which I posit real objects; and then the unity is due to the unity of the mental activity. The mind relates all its objects in space forms and relations; and hence, whenever a new object or point or place is posited, it is related to the others. In this way the sum of objects is related in a single system, in which it is possible to pass from any one to any other, and in which every object has its special position and relation with reference to all the rest. It is this possibility of bringing all its objects into a single system of relations which constitutes the psychological unity of space and the ground for affirming its real unity in objective existence. Further, this positing of points is possible in all directions; and thus arises the conception of space equally extended on all sides. There is, too, no reason why the positing of points should cease at any point whatever. The process admits of indefinite repetition; and thus arises the notion of space extended indefinitely on all sides. The infinity of space, like the infinity of number, depends on the impossibility of exhausting the processes on which the ideas depend. An infinite space cannot be represented; and an infinite number cannot be reached. Yet while any represented space, or any actual number, is finite, neither exhausts the process which produced it; on the contrary, the process is inexhaustible. Psychologically, the infinitude of space, time, and number is but the reflection of a mental process which admits of no exhaustion, something like a recurring series in division which always has a remainder and calls for a continuance of the division.

This view includes two factors, (1.) a principle of synthesis or a law according to which the mind relates its objects; (2.) an intuition of the results of this synthetic activity. That is, space exists as principle and appears as a product. As product space appears as an all-containing

void, in which all things coëxist in space relations. These actual relations, however, do not exhaust the possible relations; and this void is simply the vague synthesis in thought of all relations, real and possible. When we say that things are in space, we merely mean that they exist in space relations; and when we say that things cannot exist out of space, that means that we cannot perceive objects without establishing space relations among them. In number, when we abstract from real things, we come down to the pure form of numerical function; so in space, when we abstract from real objects, we come down to the pure forms of the spatial function. This function may proceed on the basis of its own constructions without any reference to reality, and thus determine the pure relations of space. To do this is the function of geometry.

Although space is an *a priori* contribution of the mind, it is still possible that the external experience may not only serve to elicit it, but also to determine its character to some extent. All our sensations are purely mental reactions, and yet their nature is partly dependent on the object. It is, then, conceivable that our conception of space is not purely a mental product, but one which depends on the nature of experience. Out of this thought have arisen the various schemes of transcendental geometry, and the suggestion that space in itself may have altogether different properties from those which we attribute to it.

To this it may be answered, that space in its geometrical properties is altogether indifferent to the nature of the objects. The system of space relations is one and changeless, no matter what the objects. Besides, our geometrical study goes on in complete abstraction from all objects, dealing only with space intuitions themselves. There is, then, nothing known to suggest the thought that a change in experience would modify space principles.

The transcendental geometry is properly nothing but an

analysis of assumed conditions, and says nothing about the possibility of spatially representing its conclusions. The argument is, that, if space had n dimensions, certain propositions would be true; but it does not follow that they are true until space has been shown to have n dimensions. In the same way we might construct a geometry of the square circle. Assuming a square circle, we might deduce various propositions; but that would hardly prove that square circles are possible. Both geometries would be of equal value, and both would rest upon the fact that language enables us to construct phrases for which there is no corresponding thought.

Not all sensations are equally adapted to excite the mind to a spatial representation of its objects. The most effective are those connected with touch and vision; and it may be doubted whether many of our sensations originally had any spatial reference. It is not difficult, even now, to abstract the sound of a piece of music from all spatial relations, and enjoy it in its purely qualitative significance. This question of the development of space knowledge will come up again in treating of the process of perception.

In one respect our conception is affected by experience. One visual experience doubtless gives space a certain look because of the connection established thereby between its extension and the sensations of color, which it could not have for the blind. The eye, also, enables us to grasp in a single act a large number of objects and their space relations which we might find it impossible to represent with any such clearness without its assistance. On this account many have affirmed that the blind can have no proper idea of space, and that time takes the place of space with them. This claim is sufficiently disproved by the existence of blind geometricians, a fact which would not be possible if they had not pure spatial intuitions. We cannot say, then, that our knowledge of geometrical rela-

tions is dependent on vision, but we may well believe that, without the experience of color, and the power of the eye to present a multitude of coexisting objects before the mind, the *look* of space would be very different, and our conception of the system of existing relations would be far more incomplete.

To the question why the mind views its objects under the form of space, the answer has often been given that the mind views its objects in space because they are in space. This is the common-sense view. Its inadequacy has been seen. The associationalist replies, by seeking to show that the sensations themselves must lead to the idea of space. This reply also we have found insufficient. The final conclusion is, that space is a mental principle, which compels the mind to give its objects spatial forms and relations. Of course this merely affirms a fact without deducing it; but not every fact can be deduced. The attempts to deduce the idea of space deserve to be ranked with the attempts to square the circle and invent perpetual motion.

Number is the next relation which we mention. This is pre-eminently the outcome of a mental activity. There is no other form of activity in which the mind is so consciously master of itself and of its processes as in this. It involves (1.) the establishment of a unit, and (2.) a process of counting.

Of course sensationalism has sought to deduce this idea as a simple consequence of sense experience; and at first glance the attempt would seem to be successful. Number seems to adhere so closely to the objects that to know them seems to be the same as knowing their number. Yet this, again, is only the old error which identifies plurality in experience with experience of plurality. The very utmost that could be allowed would be that unity inheres in the object; the conception of plurality arises only as the mind takes the separate units together. Until

this is done, we have not number, but the unit repeated; the countable, but not the counted. Each object may be one; but no object is two or three, etc. The clock may strike one repeatedly, but by no possibility can it do more. Our ears might give us the separate strokes, but they cannot hear their number. Hence we pass from units to number only by a process of counting, or of adding unit to unit. Number is no property of things in themselves, but only of things as united by the mind in numerical relations.

Nor can we allow that unity attaches to the sense object. The mind establishes its own unit, as appears from the fact that the same object may be one or many, according to the unit which the mind adopts. If, then, the sense impression may remain the same, and the numerical value be variously conceived, it is clear that there is something beyond the sensation in question. In fact the object is neither one nor many until the mind has fixed its unit of measure. The length of a yardstick is no more one than it is three or thirty-six. It may be any of these according as we make the unit a yard, or a foot, or an inch. Hence the single sense impression does not constitute itself a unit any more than several such impressions constitute themselves a number. The unity comes, not from the sensation itself, but from the nature of thought as a discriminating activity. In every act of discrimination the discriminated objects are set apart, each by itself, as a self-identical unit. It is this discriminating process which determines what the units shall be; and the units will be various according to the fineness, or according to the purpose, of the distinction. In a library, a book is a unit. In a book, a page or a chapter may be a unit. In either of these, again, words or sentences or paragraphs may be units; and, finally, the letters themselves may be taken as units. In many cases, as in most scientific measurements, the units are purely arbitrary. Thus the unit of work, the

unit of temperature, the unit of distance, not only do not determine themselves, but their determination is a matter of great difficulty. Any distinguishable mental act or state may be constituted a unit, and a plurality of these may furnish the conditions for the development of the whole science of number.

Again, number involves, not only discrimination, but assimilation. Number applies only to the members of a common class. This class may consist of external objects, or of internal states; but nowhere does the idea of number arise, until the numerated objects have been brought under some single point of view, or into a common class.

All that can be allowed for sense experience is that it constantly furnishes us with discriminable objects of experience, and these may act as a stimulus to the mind to perform its function of numeration, or to develop its numerical activity. We may also allow that this function begins only crudely and obscurely; but whenever and however it begins, it is something forever distinct from any passive affection of the sensibility. Moreover, when this function is once developed, it quickly outruns any possible experience, sensational or otherwise. When the beginning is once made, thereafter the mind is purely spontaneous. It creates its own data and processes and problems, and tests them all by its own insight. Indeed, there is no other test possible. Experience could never decide as to the correctness of a logarithm, or differential formula. This can be done only by the mind itself reviewing its processes and scrutinizing their various steps. One would think, on reading the arguments for the empirical origin of number, that their authors had never heard of numbers larger than ten, and had never heard at all of the various forms of numerical science. It would be interesting to see the physical source of any large number, and to note the physical difference between it and the similar representa-

tive of the same number plus or minus one. It would be equally interesting to see the physical prototype of a logarithm, a differential coefficient, the root of a surd quantity. It is very doubtful if we should recognize these rare objects, even if we should happen upon them. None of these notions are abstracted from physical experience. They are rather spontaneous products of the mind, according to laws native to itself. Thus large numbers are developed and dealt with with perfect certainty. Thus also the science of arithmetic, of algebra, of the calculus, is built up. Experience is so far from being the source of these sciences, that it cannot even test them after they are developed. For both origin and proof the mind has no resource beyond itself.

Number has been called the science of pure time. This was due to the fact that sequence incessantly furnishes us with examples of difference, and thus furnishes the conditions for the development of the numerical activity. But the sequence as such is irrelevant to the matter. It is the discrimination which is essential, and this would be as effective if the discriminated objects were in space, or simply coexisted in consciousness, as if they were in time. Number applies equally to all discriminable objects, no matter whether their differences are in space, or time, or degree, or consciousness. Number is the great measurer; that is, all quantity, whether in the form of extension, or duration, or intensity of action, or degree of a quality, can be expressed only in terms of number. The numerical function is purely formal in a double sense; (1.) it can be performed with reference to any experiential content whatever; and (2.) it can even be performed upon data which itself produces. It is only in this second sense that number is abstract. This does not mean that number is reached by abstraction; but that the numerical process can go on in abstraction from all concrete objects upon the basis of data which the mind spontaneously creates out of itself.

The relations thus far dealt with are formal and logical, and do not necessarily imply any objects beyond the subjective states and conceptions of the mind. With these ideas of likeness, of coexistence and sequence, of spatial and numerical relations, it would be possible for the mind to get a very accurate knowledge of its inner experiences, and of the order among its states. Its sensations and feelings and objects might be classed, and the finest sense for their agreements and differences might exist. The order of their coexistence and sequence might also be most accurately determined, and they might also be objectified to thought under the form of space, as in imagination and dream. In this way it would be possible for the mind to read its past and to prewise its future with the utmost accuracy. Given sensations would be the signs of others, and past and future alike might be explored. Understanding by phenomenon a spatial synthesis and projection of sense qualities, we may say that a complete science of phenomena in their coexistences and sequences and in the laws of their occurrence, would be possible. But there would be nothing in such a state to lead the mind to transcend itself. Its knowledge would be of its own states and ideas, their likeness and differences and the order of their succession. In order to pass beyond the subjective circle into an independent world of reality, we must have recourse to the metaphysical elements of thought. These consist especially in the metaphysical relations of substance and attribute, cause and effect. Only by means of these can we transcend ourselves and reach a world of objects. Our sensations are not merely known as states of ourselves; they are also referred to external things, either as their effects or as their properties. In this activity the mind establishes the relations of cause and effect, and of substance and attribute.

Metaphysics finds reasons for saying that the ideas of

cause and substance are but different sides of the same thing,—that substance can only be viewed as cause, and that cause must be regarded as substance. Nevertheless, though both ideas enter into the notion of reality, in their actual use they each denote a special element which deserves to be considered by itself. Our inquiry concerns not the metaphysical applications of these ideas, many of which are mistaken, but rather their psychological origin and logical function. If it should turn out that many things which we are accustomed to regard as substances are really only phenomena in the sense just explained, that would only concern the metaphysical application, and not the mental function, of the idea. In fact, the origin and function of the idea remain the same, even if its objective validity be denied.

By substance is meant reality in reference to its attributes. By cause is meant reality in reference to its activities. For certain attributes, or qualities, the mind posits a real subject which has them. This is conceived as the ground of their existence, and as the abiding principle of unity among them. The several attributes of a thing are not supposed to coexist in mutual indifference, but to be bound together by some real principle of unity, which determines both their coexistence and the order of their succession. In the external world the notion of substance is represented by the notion of thing; in the internal world, by the notion of soul and spirit. Both alike are conceived of as the real subject of their attributes, and as the principle of unity among them. Here we reach another of the great battle-fields of psychology.

That the idea of substance cannot be derived from the senses is evident, and for the reason that the senses do not reach the idea. The eye gives colors, the ear gives sounds, etc. The idea of substance is something which the mind brings into its sense experiences for their ex-

planation. Sensations may be experienced, and they may even be projected as spatial syntheses of qualities, or phenomena, so as to look like the world of real things; but there is nothing in this to suggest the notion of an abiding and identical reality behind the phenomena as their ground. This idea can get into the experience only as the mind brings it in.

To see this, let us inquire what the senses could give us if the mind had only the principles of space and time as the laws of its activity. Take the case of a moving body. In such a case, we should have a succession of nearly similar optical phenomena at successive points of space in successive moments of time. We should have no more identity than there is in a continuously reproduced musical note. But there is nothing in this to lead to the conception of one and the same real thing passing from point to point in space, and remaining identical with itself throughout the process. To transform this successive appearance of optical phenomena into the motion of an identical thing, the mind must bring the notion of substance into the experience as the real ground of the phenomena, and as abiding through them. No matter how real the world of things may be, the mind can know it as real only as it brings its experiences under the mental categories of cause and substance. No amount of association will help us; for the utmost that this can do is to produce complexes of sensation. Taken together with the space principle, association may produce phenomena which would look like our intuitions of things in space; but it could never pass either to the idea or to the reality of objective existence.

To escape this conclusion, there are two devices: (1.) a polemic against the idea of substance, and (2.) an identification of substance with a group of sensations. The polemic is metaphysical, and claims to reduce external existence to a group of qualities, and internal existence to a series of

mental states. The second device consists in deducing the idea of substance by calling it something else.

The metaphysical discussion is largely irrelevant to the psychological question as to the origin and nature of the idea. It is, moreover, almost entirely a series of deductions from psychological sensationalism, which is assumed to be true. This was especially the case with Hume. He pointed out that neither the internal nor the external sense can give us substance, and then undertook to adjust our views to the doctrine. The aim is to show that our total experience and knowledge can be adequately expressed in terms of sensations and feelings, real or expected. That is, the theory is first consulted to see what we may mean, and then we are told that is what we do and must mean. We examine the doctrine with reference (1.) to the mental life and (2.) to the external world.

The mind on this theory is a series of sensations and feelings, and we are told that, when we examine ourselves, we find we mean nothing more. Let us see. By hypothesis, these sensations are not sensations of anything, and they belong to nobody. They are simple, unrelated sensations, as *a, b, c, d, e, f*, etc. Of course, *a* knows nothing of *b, c*, etc., for then it would be more than a sensation; it would be a knowing subject having *b, c*, etc. for its objects. But all the rest are in the same state, and a consciousness of objects could never arise. If we suppose association to unite the sensations into groups, as *abc, bcd*, etc., we simply have a coexistence of sensations, not a knowledge of that coexistence. But consciousness, memory, and expectation are possible. Hence, some member of the series, as *m*, though by hypothesis only a unit of sensation or feeling, must still have a knowledge of other members in their various relations. It must also, though now existing for the first time and existing only for an instant, have a knowledge of past sensations as having previously existed

as states of its experience; and it must further be able to look into the future, and foresee other sensations which are to become elements of its experience after it has ceased, by hypothesis, to exist. But a sensation, or feeling, which has other sensations and feelings together with memory and expectation, and which, moreover, distinguishes those other sensations and feelings as its own states and activities, is precisely what others call a mental subject, a real agent and patient in our internal experience. Mr. Mill calls the view a "paradox"; it is more than this, it is plain nonsense. Not the first step can be taken in understanding the mental life without the conception of a real and abiding self.

The corresponding doctrine of the external world has been expounded by Mr. Mill as well as by any one. His conclusion is, that things are really only "permanent possibilities of sensation," and that this is all we mean in ascribing reality to them. He shows how, in the course of experience, actual sensations must come to be regarded as fleeting, in comparison with their possibility. Hence gradually the possibilities come to be more prominent and permanent in our thought than actual sensations. From that time on, they are regarded as things, which is only another name for permanent possibilities of sensation. The following quotation sums up the conclusion:—

"The sensations conceived do not, to our habitual thoughts, present themselves as sensations actually experienced, inasmuch as not only any one in any number of them may be supposed absent, but none of them need be present. We find that the modifications which are taking place more or less regularly in our possibilities of sensation are mostly quite independent of our consciousness, and of our presence or absence. Whether we are asleep or awake, the fire goes out, and puts an end to one particular possibility of warmth and light. Whether we are pres-

ent or absent, the corn ripens, and brings a new possibility of food. Hence we speedily think to learn of Nature as manifested in the modifications of some of these by others. The sensations, though the original foundation of the whole, come to be looked upon as a sort of accident depending on us, and the possibilities are much more real than the actual sensations, nay, as the very realities of which these are only the representations, appearances, or effects. When this state of mind has been arrived at, then, and from that time forward, we are never conscious of a present sensation without instantaneously referring it to some one of the groups of possibilities into which a sensation of that particular description enters; and if we do not yet know to what group to refer it, we at least feel an irresistible conviction that it must belong to some groups or others; i. e. that its presence proves the existence, here and now, of a great number and variety of possibilities of sensation, without which it would not have been. The whole set of sensations, as possible, form a permanent background to any one or more of them that are, at a given moment, actual; and the possibilities are conceived as standing to the actual sensations in the relation of a cause to its effects, or of canvas to the figures painted on it, or of a root to the trunk, leaves, and flowers, or of a substratum to that which is spread over it, or, in transcendental language, of matter to form.”¹

This account is not perfectly clear. The system of possible sensations seems to have an objective existence. It is spoken of as independent of our presence and consciousness, and elsewhere it is declared to exist for other minds as well as our own. The dying fire and the ripening corn are given as illustrations. Moreover, there is an “active force” among them, which is “manifested in the modification of some of these by others.” Further, these “possi-

¹ Examination of Sir Wm. Hamilton's Philosophy, Vol. I. pp. 240, 241.

bilities are conceived as standing to the actual sensations in the relation of a cause to its effect." But things which exist apart from our perception, have active forces, modify one another, and produce sensational effects in us, are better described as real things than as possibilities of sensation. If these words are to be taken in their ordinary sense, Mr. Mill has given us, not a new conception, but only a new terminology. The permanent possibilities of sensation mean those real things which condition sensation. Our ideas remain what they were, but language has been outraged.

But Mr. Mill can hardly have meditated so inglorious an outcome; and we must reckon the above terms as specimens of his frequent use of language to express doctrines which his words seem to contradict. Let us try, then, to understand the phrase "permanent possibilities of sensation." By a possible sensation, we can only mean a conception of a sensation which would be realized in an actual sensation if certain conditions were fulfilled. But such a sensation represents nothing objective or permanent. My real sensations exist only for myself; my possible sensations can certainly have no more objectivity. In fact, a possible sensation is strictly nothing and nowhere until it becomes real, and then it has existence only for the mind that has it. Nevertheless, Mr. Mill speaks of those possibilities as objective and permanent. Of course, if there were real things external to the mind, and capable of acting upon it, many sensations might be possible; but when the real things are denied, the objective and permanent possibility is nothing. A possibility is always a consequence or implication of something real, and is a pure figment of abstraction otherwise. When next Mr. Mill speaks of the possible sensations as the cause of actual sensations, we are in the lowest depths of unintelligibility. Thus, I see an apple, and have a sensation of color. The

cause of this actual sensation is the possibility of touching, tasting, and smelling the apple! By hypothesis, the apple is not a substantial thing, but a complex possibility of sensation; and I have a sensation of color because I might have sensations of touch, taste, and smell. But if this is not the meaning, then the terms have some occult sense which has not been revealed except to faith. In short, if there be a real something external to ourselves which causes sensations, that something is more than a possibility; it is a productive agent. If there is no such thing, then our sensations are only our own states, and, however complicated they may become through association, they can never acquire more than a fictitious objectivity and independence.

The metaphysical denial of the reality of substance leads to nonsense in the mental world, and to nihilism and solipsism in the outer world. This only can be allowed, that the objects of sense perception may be only phenomena to which the mind has given substantial form; but in that case we should still have to affirm objective reality behind the phenomena as their ground, and we should also have to affirm substance as a mental principle to explain the substantial form which the mind gives its phenomena.

The psychological origin of the idea needs little separate discussion. The senses do not give it. Not the eye, for then it would be a color; not the ear, for then it would be a sound; not the nose, for then it would be an odor; not touch, for then it would be a feeling of pressure or resistance. Nor can any combination of these sensations represent it. I have this or that sensation, or I expect this or that sensation, can never be made to mean that this or that real thing exists. We cannot identify this idea of reality with any groupings or possibilities of sensation. The latter phrase defies all construction until we bring the idea of reality into it. The idea of substance which sensation-

alism explains is not the one we have; and the idea we have is not explained. There is a certain excess in the actual idea over any possible work of association; and the excess contains the gist of the idea. The ground of this excess must be sought in the laws of the mind itself. Hume refers this excess of our rational ideas over sensational compounds to a mental "propensity to feign." That is, they are of subjective origin after all; and since the "propensity to feign" is universal, it may, with more propriety, be called a law of thought. The "propensity to feign" means only that the mind, on its own warrant, transcends simple sense experience by bringing certain rational elements into the sensations for their rationalization and interpretation. We regard substance, therefore, as primarily a mental principle, and secondarily as an ontological reality; but the recognition of substance as reality is possible only because of its control as a mental principle.

The principle of causation whereby the mind brings its objects into the relation of cause and effect next demands consideration. This, too, is no datum of experience, but a mental contribution by the reason in order to comprehend experience. Since the time of Hume, sensationalism has sought (1.) to deny the objective validity of the idea, (2.) to deduce the idea, and (3.) to reduce it to something else. By causation is meant any production or determination of one thing by another, or the production or modification of any state of a thing by any other state of the same thing.

The denial of the objective validity of the idea rests upon the assumed truth of the sensational theory of knowledge. The senses can never give us causal connection, even when they are supplemented by the temporal and spatial activity of the mind. Even then we have only a coexistence and sequence of phenomena. The sequence may be irregular, and it may be constant; but it is still sequence, and not efficiency. And since the senses cannot give us causal

connection, there is no such thing. In that case no mental state is affected by any antecedent mental state, for there is no such thing as affection. If, then, we now have the thought of a variety of past experiences, that is not due to our having had a past experience; for that would be to suppose the antecedents to condition the consequents. In short, it would not be *due* to anything. The present thought would be what it is, causeless and groundless. Again, our mental states would not be the products of any system of external things, for that would be to assume causation again. Each mental state, whether referring to a past experience or to a world of objects, would be only a mental state, causeless and groundless. It would contain no warrant for transcending itself; and if we continued to allow a mental subject, solipsism would be the result. Unless we are prepared to dive into this depth of absurdity, the objective validity of causation must be allowed. It is, indeed, possible that our apparent objects are only phenomena, and have no dynamic relations among themselves; but even then we should have to affirm an efficient ground behind them, which produces them and determines their laws and relations.

The metaphysical question is irrelevant to the psychological question. For if the idea were denied to have any metaphysical validity, its psychological existence and logical function would remain the same. As a matter of fact, we do establish relations of cause and effect among our objects, and this fact must be accounted for. Temporal succession and spatial coexistence reveal no such relations; whence, then, does the idea come? The deduction of the idea from experience consists in taking for granted the world of things in causal relations. This conception being kept well in mind, sensations are supposed to be generated, and invariable relations of sequence are supposed to be established. When this process has gone on for some time and

the product has become very complex, we may suppose that "internal relations" among sensations have been "adjusted" to "external relations" among things. But the "external relations" were relations of causality among real things. We remember this, and the deduction is complete. So naturally and spontaneously does the mind affirm the causal relation, that it never occurs to the speculator and his disciples that the mind can pass to that world of real things in causal relations only by virtue of the causal principle. The raw material of perception is sensations; and these have to be built into a world of things before such a world can be known. However real that world may be, it can be reached only through a principle in the mind itself, whereby it brings its objects into the relation of cause and effect. When this is borne in mind, it will not seem to be so brilliant an effort of analysis to assume in the data the idea to be explained.

We must, then, reduce the idea to something else, or regard it as a mental datum of reason itself. This reduction was attempted by Hume in the assurance that by causation we mean only invariable antecedence and sequence. This was met by Reid with the objection that there are cases of invariable antecedence and sequence, as day and night, which are not regarded as in causal relations. Mill proposes to amend the definition by adding "unconditional." "Invariable sequence, therefore, is not synonymous with causation, unless the sequence, besides being invariable, is unconditional. . . . We may define, therefore, the cause of a phenomenon to be the antecedent, or the concurrence of antecedents, on which it is invariably and unconditionally consequent."¹ "Unconditionally" is defined as "subject to no other than negative conditions"; and "negative conditions . . . may all be summed up under one head, namely, the absence of preventing or counteracting causes."²

¹ System of Logic, 8th edition, p. 245.

² Ibid., p. 241.

In the first quotation Mr. Mill seems to be defining causation as meaning invariable unconditional sequence. In the second, his language may be interpreted as defining causation, or as indicating which of various antecedents is the cause. This ambiguity is increased by the fact that Mr. Mill disclaims all reference to efficient causation, his aim being to define causation as used in inductive science. At the same time, he often lapses into the assumption that this definition includes all there is in causation, and that any excess in the philosophic conception is a speculative phantom. In either case, it is rather discouraging to find the notion defined appearing in the definition. Thus causation is not invariable sequence, but "invariable unconditional sequence"; but an unconditional sequence is one which always occurs when not hindered by "preventing or counteracting causes." Mr. Mill's laborious attempt to find a formula to take the place of the principle of causation results in producing one which demands the idea of causation for its comprehension. One of the most extraordinary features of this attempt to reduce causation to invariable sequence is the failure to notice that in that case we should affirm causation as the rare exception, and not as the universal rule. Nature does not present itself as a series of invariable sequences, but as a highly variable order of succession. The belief in uniformity is a late product; while the belief in causation is as old as the mind. The belief in uniformity is even now a scientific rather than a popular belief; and the uniformity in most cases is believed in rather than perceived. One would think, to read the reductions of causation to uniformity, that nature is a series of straight lines, instead of a tangled web whose pattern is mostly a matter of guess-work.

The aim of inductive science is to find the uniformities of nature; and our definition of causation is irrelevant to this aim. Further, we may suppose a formula invented

which should cover every case of causation and exclude all others, yet without covering causation itself. Let us admit that the relation of causation involves the invariable and unconditional sequence of the effect, we still have only a mark and consequence of the relation, and not the relation itself. To be sure, we ought not to mean any more than sequence, but we do mean more. We do not mean that one state of things was, and another state is; we mean that one state is *because* another state was. This idea of efficiency, of determination, is omitted from the temporal formula; and yet this is the gist of the matter. As in the case of substance, the idea we have is not explained, but rather the idea which we ought to have but have not. We must take our choice. If causation be real efficiency, the idea cannot be deduced from sense experience. If it mean only sequence, then no thing or state of things affects anything else, or produces any new state of things. In that case our sensations point to nothing beyond themselves. Every mental state simply is as it is and while it is. Any reference of it to objective things or persons as its cause is groundless. Likewise any reference to past experience as explaining its peculiarities is equally groundless. It is as it is, and where and when it is, for no reason or cause at all. It simply is.

This view would cancel sensationalism entirely. A curious inconsequence has always appeared in sensationalist philosophy at this point. The aim has been to represent all rational ideas as products of sensation and the laws of association. But when this is applied to causation, the philosophy cancels itself. For all the manifold "explanations" which sensationalism has vouchsafed to a long-suffering world consist in showing how antecedent mental states must determine new mental states according to the laws of association; and as for sensations most sensationalists have had no hesitation in referring them to external

causes without scruple, or even suspicion of the inconsistency. Concerning any conception of our mature life, we are warned against taking it as an original mental fact. We are told how it came about as a deposit of experience either in us or in our ancestors. If a suggestion of freedom is made, it is frowned upon forthwith as one of the most unscientific ideas possible, if not a trace of an antiquated superstition. But if sensationalism be admitted, all this is hopelessly inconsistent. No idea is, or is as it is, because any other idea was; rather some ideas were, and some other ideas are. To suppose an influence, a modification, is contrary to the hypothesis. It is equally so to assume a world beyond our sensations, a process of evolution, etc. To suppose a determination in volition is likewise to fly in the face of the theory. If anything is or occurs, we must not ask why; for there is no why. Thus all the explanations of sensationalism disappear, and by sheer excess the doctrine cancels itself.

We have the idea of causation. It cannot be abstracted from experience, for the reason that it cannot be found in experience until the mind puts it there. We cannot get along without it. The sensationalist can neither explain it nor explain it away. We must, then, regard the law of causation as primarily a mental principle upon which our rational life depends. Its ontological significance may be left to metaphysics.

The conditions of the development of the ideas of cause and substance admit of no sharp determination. The most general statement would be, that the notion of cause is developed only through the perception of change, and the notion of substance only through some perception of permanence.

In the external world the notion of substance is expressed in the notion of thing; and to the formation of this notion there are necessary (1.) a spatial separation and (2.) a temporal continuity. Space is pre-eminently the principle

by which we differentiate things; and when this is impossible, we view the thing as one. Temporal continuity is also the principle by which we identify things. We regard a thing as the same, no matter what changes of form and quality it may undergo, if there be a temporal continuity of phenomena connected with it. On the other hand, a complete likeness of properties would not be taken as pointing to the same thing, if we assumed a solution of continuity in the thing's changes. Such a fact would be interpreted as the disappearance of one thing and the appearance of another. This spatial separation and temporal continuity, which were originally necessary to the formation of the notion of a thing, we retain as marks of a thing even when it eludes our perception. The atomic theory and the doctrine of the indestructibility of matter are examples.

Change is necessary to the development of the idea of causation. This is the truth in the claim that sequence leads to the notion. It does lead to it, but it does not give it. Any variation of one thing with another leads to the notion of causal connection.

It is often claimed that this idea arises only from the consciousness of our own activity, so that, if we were not volitional and active, the conception of causation would never arise. This implies (1.) that we have a direct consciousness of causation in our own activity, and (2.) that this is the source of all ideas of causation.

The first point is mistaken, so far as our external action is concerned. In the control of our body we are only occasions for the agency of some foreign power; our activity extends only to the production of the volition. We are not, then, conscious of ourselves as causes in the outer world. It may also be questioned how far our inner causality is a matter of direct consciousness. But admitting such consciousness, the question would next arise whether this is a case of causation or the meaning of causation.

If we call it a case, then the causal idea is presupposed. If we identify it with causation, then we must say that causation means willing guided by purpose. But in fact causation does not mean this primarily for the great majority even of thinkers. Such an identification, if reached at all, must emerge as the result of a long course of metaphysical reasoning, and not as an analysis of the simple notion of causation. And even this would apply only to causation in things. But mental states modify one another, and we apply the notion of causation to them; yet in most cases they are not products of any assignable volition, and still less can they be supposed to have volition. When the idea *a* is in the mind, the idea *b* is produced. Here is causation, but whichever way we read it we cannot get the idea of volition into it. We do not will the appearance of *b*, nor does *a* will it. Nor is there any way of getting will into the problem except by saying that the First Cause wills *b* on occasion of *a*.

The truth in this general claim is this : —

1. We cannot represent causation to ourselves except under a psychological form. Hence the mind has often sought to interpret it anthropomorphically by attributing a kind of will to the cause and a kind of feeling to the thing acted upon. When this is left out there remains only the representation of antecedence and sequence, with the conviction, however, that we mean more, even the unrepresentable notion of efficiency.

2. Our own activities are especially effective in awaking the notion of cause. In particular, the resistance we experience in our dealing with the external world is peculiarly adapted to lead to a differentiation of the self and the not-self. We may well believe that, if we were simply intellectual lookers-on upon the movements of phenomena, we should be much longer in reaching the idea of causation than we are when we are ourselves in volitional interaction

with the outer world. But if our rational nature remained unchanged, the demand for a cause would arise even apart from all voluntary activity. For while the will may reveal a case of causation, it is the reason which demands causation and declares it universal.

The formulated principle of causation is, of course, second, and not first. As in the case of space, the mind does not begin with an idea of one all-embracing space, but rather begins by setting particular objects into space relations, so here also the mind does not begin with a general formula, but by affirming causal relations among its objects. It is only later, through a reflection upon its procedure in so doing, that the mind reaches the generalized principle that every event or change must have a cause.

The notions of cause and substance stand in the most intimate relations to each other, and mutually affect each other's development. Likewise they receive various modifications in their several applications. The element of causality taken up into the notion of a thing modifies greatly the notion of substance by turning its qualities into activities. In this way arise such notions as force, energy, power, capacity, etc. These are causal terms considered as denoting qualities of a substance. Similarly, in psychology we have faculties, capacities, impulses, etc. The development and analysis of these ideas must be handed over to logic and metaphysics.

The general aim of this chapter has been to show that there are two orders of movement in the mind. The first comprises the sensations and their changes, according to the laws of association. The second comprises the reaction upon the sensations, and the establishment of relations among them for their rationalization and interpretation. The former is a phase of the sensibility; the latter is an activity of thought or reason. The former furnishes the raw material; the latter gives it form and interpretation.

There is no possibility of either of these passing into the other. The rational activity cannot dispense with the raw material of sensibility; and the attempts to elevate the sensibility to the plane of reason by the force of association belong to the sorriest efforts of speculation.

Within the general aim mentioned, the specific aim has been to discuss the leading rational relations which constitute the framework of knowledge, and ultimately of intelligence itself. The mind attains to knowledge only through the establishment of these relations. If we drop them out of our mental scheme, the whole system of knowledge falls together in a chaotic mass, and thought perishes. But it has not been our aim to write the psychological history of the categories, but only to determine their source and seat. We do not regard them as existing primarily as ideas, but as being determinative principles of mental procedure, or as constitutive principles of intelligence. Supposing this established, one may go on to study the order and conditions of their manifestation. The question whether they mediate a valid knowledge also remains open. All that appears at present is, that there are certain directive and constitutive principles in the developed mental life, which can only be viewed as expressing the fundamental build of the mind itself.

We have discussed only the leading categories. Whether a completed system of categories is possible is much discussed; our own conviction is that it is not possible. The categories, also, do not admit of deduction from a single root. This ideal has been fondly cherished, and eagerly followed; but we have to take them as given, without any hope of deducing one from another. It can never be shown that a being who has experiences in time must also project them under the form of space, or that the category of causation implies space relations.

APPENDIX TO CHAPTER IV.

As the sensational philosophy is supposed to have received great aid and comfort from the doctrine of evolution, it seems desirable to consider briefly its bearings upon psychology.

No individual experience is able to transform sensations into the ideas and categories of the reason. It is suggested, however, that a race-experience might accomplish this wonder in such a way that what is now *apriori* for the individual may be *aposteriori* for the race. By heredity the individual inherits the experience of his ancestors, and thus mental forms and faculties are produced as the integral of this race-experience. This suggestion has been eagerly adopted, and has been supposed greatly to extend the resources of the sensational school. In fact, it leaves the argument weaker than it was before; as it in no wise strengthens the positive argument, and has in addition many special difficulties of its own. In particular, it rejects the sensationalist's analysis of the individual consciousness, and declares that this cannot be understood as the outcome of the individual experience. If, then, it cannot make its theory of a race-experience work, it has surrendered in advance. The difficulties are commonly kept out of sight by words; all the more necessary is it to seek to comprehend the process.

Inasmuch as this theory is often joined with materialism, we first point out that materialism cannot be joined with any sensational philosophy without mutual destruction. The grounds for this claim are these:—

1. Materialism is opposed to sensationalism and empiricism, because it deduces all mental states from physical

structure. They represent no deposit of experience at all; but are solely the subjective expression of a special phase of molecular aggregation and movement. This is so much the case, that, if the physical double of any person were produced at first hand from inorganic raw material, it would have all the memories, expectations, knowledge, and mental insight of the person himself. Of course, the organism might be slowly developed, but the mental states, as such, would be at every point only the necessary subjective expression of what the body is at that moment, and would have no more connection among themselves than the cloud-shadows which chase one another over the fields on a summer's day. For a given kind and shade of feeling, there would be a special molecular grouping. For a specific thought or judgment, there would be another and peculiar grouping. For moral ideas and for religious conceptions, likewise, there would be specific and definite groupings. On this theory, what is needed for an all-embracing memory, for the profoundest insight into present and future, and even for the loftiest moral and religious aspirations, is not mental experience, but the proper organism. The mental results, also, are never anything contingent and adventitious, but rather something inherent and essential. The intuition, the morality, the religion, are all as inherent in the nature of matter as gravitation and affinity, and need only the fulfilment of certain conditions for their manifestations. There may be an order of succession, but there can be no psychological transformation of lower into higher forms. The theory provides only for succession, not for transformation. To be sure, the materialist has generally been a sensationalist, and having, as he thinks, explained sensations, he then leaves them to combine on their own account. But in so doing he forgets that in his theory feelings have no power to come, or go, or combine, of themselves, and that every mental state is what it is, a

subjective phase of a special form of molecular grouping and movement, and not in any sense a modification of other mental states. Materialism ought to teach a lofty form of apriorism. The existing alliance between materialism and sensationalism is one of the many inconsistencies of evolutionary thinking.

2. Conversely, sensationalism is incompatible with materialism; for, as we have already seen, sensationalism, when reasoned out, must deny matter as an objective reality altogether. Matter becomes only a group of sensations projected as an object, and so far from explaining the existence of mind, it is dependent upon mind for its own existence.

Psychological transformationism is impossible where there is not a real mental subject. Now all that heredity could do in this direction would be still more probable if we suppose one and the same person to live through the life of the race. Such a fact would be the most favorable for the proposed transformation; but the considerations already deduced in considering the deductions of the ideas of space, cause, and substance are fatal to its success. The difficulties there dwelt upon had nothing to do with time; and they would be no less if the time were indefinitely extended. The premises were incommensurable with the conclusion; and there is nothing in simple duration to fill up the gulf between them. It was necessary at last to falsify the ideas, and call something else by their name; and this was the deduction. And so it would be if we supposed the individual experience to be of indefinite duration. The ambiguity of the facts of successive development, and the fanciful character of the "chemistry of ideas," have already been pointed out. Hence in this most favorable case we are no better off as sensationalists with the doctrine of evolution than without it. The strange terms and long times impress the imagina-

tion and minds of a passive type, but have no rational significance.

The actual circumstances are far more unfavorable to success, as they involve a series of different minds, and it becomes a difficult problem to connect a race-experience with an individual experience. Of course the solution is found in heredity, but this is a word more easily pronounced than understood. Let *a, b, c, d*, etc. represent the successive members of a genealogical series; these members are ontologically as distinct as different atoms. But if the notion of a race-experience is to help us, there must be some way whereby the experience of *a* may become that of *b*, etc. At the same time, it must not become *b*'s own experience, nor yet be known as *a*'s experience; for then, in one form or another, the memories of the later members of the series would go back to the beginning. Experience, then, must be transmitted as tendencies or capacities of some sort, and not as conscious knowledge or conceptions of any kind. If we ask how this is done, we are referred to heredity; but heredity is the problem, not its solution.

The current device for solving this problem supposes the transmission to take place through physical modifications, especially of the brain, which are transmitted by heredity. In this way posterity inherit improved brains, and through them improved thought. This puts the mystery of heredity in the physical realm. The device limps in the following respects.

1. If it were so, the fact would be ambiguous. On any theory, an improved brain must lead to improved mental action, other things being equal. Such a brain would be more pliant to mental demands, and would furnish the mind a finer and subtler stimulus to the unfolding of its own proper powers; but such a fact would be irrelevant to the present question. It remains undecided, then, whether the effect of heredity is to transmit a mental experience or

merely to produce a more facile organ. The former view is the only relevant one.

2. Against this view, we have seen that all known facts oppose the theory that ideas are represented by any structural combinations in the brain. But if they were, and if those combinations were reproduced in the brains of descendants, there would be no transmission of ideas, but only a physical stimulus to the production of these ideas by the mind. The idea would still come from the mind; and all we should inherit would be an incitement to its production. Its ground and nature would still be due to the mind in question, and not to ancestral experience. In any other sense than this, there can be no transmission of mental experience; but this fails entirely to meet the case. The fact would be, that the new mental subject, *M*, would be in interaction with an organism genealogically connected with antecedent organisms. But this organism neither thinks nor has thoughts in it; but merely stimulates *M* to unfold its own proper nature. That *M* still contains the mystery.

The truth is, that the holders of this view have generally been haunted by the fancy that the actual mental experience may be handed bodily along. Under the influence of this fancy they have produced such highly elegant conceptions as "mind-stuff," and "psychoplasm," and have spoken freely of present thoughts and emotions as integrals or echoes of all ancestral experiences. But such figures of speech defy all interpretation. The experience of the individual as a particular mental event cannot be recovered by the person himself; still less can an ancestor's experience be recovered. If, then, we should examine an evolved nervous system, we should certainly find no sensations or experiences, or echoes, or integrals of mental states of any kind, in it. We should find simply a physical organism which has reached its present state as the result of a long

process of development. But it would have no more experience in it than a similar organism made direct from the inorganic; and in order that the structure of this evolved organism should ever acquire any mental significance, it must come into interaction with a distinct mental subject, which shall not be furnished by it with ready-made ideas and experiences, but which shall be stimulated by it to unfold its own essential nature.

Supposing all these difficulties surmounted, we are as badly off as ever in seeing how heredity can help us in the advance to new ideas. It seems clear, first of all, that before our ancestors could transmit an idea they must have had it, and that we cannot well inherit what they did not have. Mental heredity with all its mystery is simply a means of transmitting what is possessed, and not a method of originating new ideas. If, then, our ancestors had experience only of sensations, they could by no possibility have transmitted other than sensational experience. Before they could do more, they must have risen above the sensational plane; and this carries us back to the analysis of the individual consciousness. Indeed, heredity, instead of giving us more than our ancestors had, would rather give us less; as the transmission takes place in the form of tendencies and instincts, rather than in conscious and rational perception. For example, our moral instincts are supposed to be due to ancestral perceptions of utility; hence, where our ancestors had a rational perception of utility we have an instinct from which the rational element has disappeared. The intelligence has "lapsed" by transmission.

In these mechanical notions of transmission there is the crude fancy before mentioned, that ideas are something which can be passed along bodily and ready made. But in fact all ideas, and especially our ideas of rational relations, are mental functions which exist only in and through the mental activity which produces them. Hence, to trans-

mit ideas or experience means only to stimulate the mind to perform the appropriate function; and that which fits the mind to perform that function must always be sought, not in experience, but in the mysterious nature of the mind itself.

It is needless to pursue the view further. The imaginations of its upholders have been so impressed with the grandeur of the theory, that they have not analyzed it to see whether it would do what it promised. In addition to the influence of the vast periods of time dealt with, and the strange terminology employed, the use of the general term mind has been very effective. This has been "developed" all the way up from the feeble stirrings of the polyp's tentacles to the mental insight of the philosopher. Of course there is no mind, but a series of individual minds; but to have remembered this would have seriously embarrassed the "development." We conclude that evolution has no such importance for psychology as its friends imagine. In the history of the world, there is a successive appearance of mental subjects of ascending grade; in the history of the individual, there is a successive appearance of graded mental functions. Both facts are interesting, but without theoretical significance. The attempt to identify these functions as essentially the same is a failure. The gathering up of these mental subjects under the one term mind is simply an echo of the scholastic realism. Finally, the dispute does not concern the facts of development, but their interpretation. The fact is a successive and conditional development of mental functions. The explanation is double. Sensationalism seeks to identify these functions as phases of the same sensitive process. Rationalism regards them as essentially different, so that, while the lower may condition the unfolding of the higher, they cannot of themselves pass into the higher, neither in an individual experience nor in a race-experience.

CHAPTER V.

THE FEELINGS.

THE doctrine of the feelings is the most confused part of psychology, and has been least developed. From a philosophical standpoint, the psychology of cognition is more interesting; and from an ethical standpoint, the psychology of volition is more important. Further, the cognitive elements admit of much more exact determination than those of feeling. The former are fixed and universal; the latter are fleeting and individual. The former admit of direct inspection and analysis in consciousness; the latter can be studied only indirectly, for the reflective consciousness is fatal to their spontaneity. Nothing is so real as a feeling, nothing is so hard to define. In objective perception we can at least point to the object, and be fairly sure that others have the same thing in mind; but here we are confined to language, and the terminology of feeling partakes of the vagueness and indefiniteness of the feelings themselves.

No definition of feeling can be given. We can only identify and name it. In sensation we can distinguish the perception of a quality and a state of agreeable or disagreeable consciousness which attends it. This state of consciousness is a physical feeling. The perception of the quality is the cognitive side of the sensation; the feeling is the accompanying state of the sensibility. These are the two elements which, under the names of perception and sensation, Hamilton declared to vary inversely each as the other.

Again, in our perception of objects we can distinguish the simple cognitive grasp of the fact from any delight

or dislike we may feel. We see a flower. Perception simply gives it as it is in color, outline, etc., and does not go beyond this colorless presentation of the fact. But along with this perception there goes a sense of delight in it. This is something added to the cognition. It is an æsthetic feeling.

Again, we conceive an act both in its motives and in its consequences. We read, perhaps, of some great deed of heroism or of self-denial. Cognition simply reports the fact; but along with this there go various sentiments of approval, admiration, etc. These, too, are not cognitions, but moral feelings.

We might, then, define feeling as that state of consciousness which consists in some form of pleasure or pain, like or dislike, satisfaction or dissatisfaction. Of course, this is not a definition, but only an identification. What the terms mean can be known only in experience. If we give pleasure and pain the widest meaning, so as to include all desirable and undesirable states of consciousness, we may say that feeling, in opposition to knowing, consists in some form of pleasurable, or painful, consciousness. This extension of terms, however, is more likely to confuse than otherwise. The feelings of æsthetic and moral satisfaction or dissatisfaction, the simple intellectual feeling of surprise or curiosity, the many feelings which have so little affinity with pleasure or pain as to seem indifferent to both,—none of these are well described as pleasurable or painful. Let us say, then, as a final definition, that feeling is feeling, just as knowing is knowing; and it does generally consist in some form of desirable or undesirable consciousness, which either springs directly from our physical experience, or which attends our mental activities, or which arises from the contemplation of our objects and ideas.

Feeling cannot be deduced. Sensation, considered as

the simple cognition of a quality, involves no feeling. Perception, considered as a cognition of objects and their relations, also involves no feeling. Reflection, too, considered as a form of internal cognition, likewise implies no feeling. Action, finally, considered as the execution of a purpose, does not imply feeling. Actually, all of these processes are accompanied by feeling, not, however, as an analytic implication, but rather as an incommensurable addition. A purely cognitive intelligence might have perfect knowledge of things and their relations to itself; it might know that certain things, or courses of action, would destroy its own existence; it might even know that its own existence was about to be destroyed; but this knowledge alone would imply no feeling. Such an intellect would be like a mirror; it would accurately reflect all that passed before it; but it would be as indifferent as the mirror. Even the blow that should shatter it would be reflected with the same passionless indifference as all things else. Nor would it be otherwise if we supposed this intelligence to be connected with a physical organism. It would know the physical conditions of its existence, and might know that those conditions were being violated; but neither the knowledge nor the fact would involve any feeling. Just as no state of the organism involves perception as an analytic implication, so no state of the organism, however abnormal it may be, involves feeling as an analytic implication. Indeed, in our own case, the most deadly interference with the health of the organism can take place without any affection of the sensibility. Thus parts of the brain can be cut away without pain; and many forms of disease are most fatal when painless, while some are even attended by feelings of unusual comfort. If now we find that such complete sensitive indifference to physical and intellectual states in general does not exist, we must conclude that the soul is not merely cognitive, but also sensitive, that it not only knows, but enjoys and suf-

fers, and that this feature of our life must be ascribed to a special reaction of the soul against the incitements of its physical and cognitive experience.

Until the time of Kant there was a general tendency in psychology to regard feeling as a kind of knowing. Descartes defined pleasure as a "consciousness of some one or other of our perfections." Leibnitz viewed feeling as a confused or obscure perception. Wolff called pleasure "an intuitive knowledge of perfection." Locke defined the feelings by the cognitive circumstances under which they arise. Thus, "Sorrow is uneasiness in the mind upon the thought of a good lost." "Despair is the thought of the unattainableness of any good." (Essay, Book II. c. 20.) The last definition is a good example of his tendency to identify the feeling with the conception. Even Kant, who strove to distinguish feeling from cognition, defined pleasure as the feeling of furtherance, and pain as the feeling of hindrance, of life. From the physiological side, also, there have been attempts to define feeling as unconscious perception of harmony or discord between our state and the normal conditions of well-being. Opposed to this attempt to reduce feeling to cognition is the attempt to reduce cognition to feeling. This has been the general aim of the sensationists; but by feeling they have generally understood sensations which involve both cognitive and sensitive elements; so that the deduction turns out to be a device of definition. The apparent success of both of these opposed attempts is due to the fact that in actual mental states both elements are present; so that, whichever we resolve to make fundamental, the other will surely creep into recognition. This subreption will easily pass for deduction. Kant first emphasized the separateness of feeling and cognition. This, however, does not mean that feeling and cognition exist in absolute separation and independence, but only that neither can be deduced from the other.

The attempts to deduce feeling generally confound feeling with its conditions. Thus physical feeling is said to result from the state of the organism. Allowing this to be true, we have only a condition, not the thing. As there is nothing in the conception of nervous action which implies that a sensation of light must result, so there is nothing in any physical conception which implies that it must be accompanied with pleasure or pain. There is nothing in the conception of congestion, or atrophy, or a burn, which implies that it must be felt as pain; and if pain does result, it can only be as there is a subject capable of feeling, and in such relation to the organism that the states of the latter furnish the conditions for the development of feeling. The fact that pain so generally results from an abnormal state of the body must not mislead us into thinking that the connection is one of logical implication, or anything more than a simple fact. Moreover, we have seen that this connection is not constant. In general, an abnormal state is indicated by pain; but sometimes there is just the opposite result of unusual comfort. If we should allow that pleasure actually attends all action which tends to conserve the individual or the race, while pain attends action of opposite tendency, we should still have no deduction, but only a discovery of a biological and teleological function for feeling which actually exists. For all that we can see, the same end might have been reached in other ways.

Herbart has sought to deduce feeling from the interaction of our representations. This also is a failure in all respects. We have seen that the notion of interaction among mental states is an unclear one at best, and, in most of its forms, absurd. But, apart from these difficulties, the theory has the following short-comings:—

1. It ignores physical feeling, and would imply that neither fire nor frost could hurt until a store of ideas had been developed.

2. There is no proof possible that the simple dynamic relations of mental states, whereby they should strengthen or repress, re-enforce or extinguish one another, must be experienced as pleasure or pain. Beginning with purely cognitive elements, there is no way of transition to sensitive elements.

3. If such transition, however, is made, it can only be as the soul is more than a purely cognitive being. It must have a complex nature, such that the relations of its ideas furnish the incitement to a special form of sensitive reaction. Loss is not sorrow; repression is not pain; failure is not disappointment; success is not happiness; facility is not pleasure. These subjects and predicates are not analytically connected; and no reflection upon the definition of the former will reveal the latter.

The claim that feeling is a perception of the significance that a given state has for our well-being, is of the same sort; or rather it confounds feeling with its conditions on the one hand, and with perception on the other. Without doubt, feeling is often conditioned by the agreement or disagreement of our state with the conditions of our normal existence, but we cannot identify it either with the agreement or disagreement, or with a perception of the same. Much of our feeling toward objects also arises from some conception of their significance for our well-being; but this conception again is only the ground of the feeling, and not the feeling itself. A toothache arises from an abnormal state of the nerve; but for all that, it is neither that state nor a perception of that state; it is purely its own wretched self. We conclude, then, that while feeling attends our physical and mental functions, and springs also from the contemplation of objects and relations, there is no way of deducing it from them.

Feelings have two sources, the state of the organism and the relations of our mental states and ideas. Feelings from

the former source we call the physical feelings; for those having a mental source, there is no comprehensive term. They are sometimes called the emotions; but in popular language the emotions are commonly viewed as passive feelings in distinction from the desires. In actual experience many forms of feeling exist which have both a physical and a mental root. Indeed, the physical state enters as an important factor into many of our higher emotions. The most striking example is that of parental and conjugal affection. Here the physical and spiritual factors of our nature work together. The physical elements furnish the occasion and the stimulus for the development of spiritual sentiments; and these in turn idealize physical relations and prevent them from ever sinking to the level of their purely physical significance. Feelings of this class cannot be understood from either the physical or the mental side alone; but only from the co-working of both. The analogues of these sentiments in the brute world seem to have only a physical root; as they do not last beyond the physical conditions which occasioned them.

The physical feelings arise from some physical state or function. The special feelings are connected with some special part, either some of the organs of special sense or some specific part of the organism. The organs of the special senses vary very greatly in their relation to feeling. Those which have the function of giving us a knowledge of the outer world are almost sensitively indifferent in their normal activity. The eye and ear have only the faintest functional feelings, except when strained, wearied, or diseased. The other special senses are more pronounced in this respect; and the organic sensations are pure feelings. As the feeling increases, the cognitive element diminishes; and where both are present, an excess of feeling absorbs attention and makes it hard to concentrate thought. When the feeling is not located, we have a general sense of com-

fort or discomfort, of strength or weakness, of health or disease, etc.

The physical feelings may be roughly distinguished as constitutional and contingent. The former are such feelings as attend those physical appetites and cravings which arise from the nature of the organism itself. Hunger and thirst, the need of exercise and of rest, are examples. Other physical feelings do not spring from the nature and law of the organism, but depend upon some contingent state, either arising within the organism or resulting from external action upon it.

The teleological character of the physical feelings has already been sufficiently indicated. They are almost entirely related to the use and well-being of the organism, or to the arousing and directing of our activity. Taken together, they constitute a highly complex series both of incitements and of repressions of activity; and this activity is in the main adapted to preserve either the individual or the race. This rule, however, is subject to many exceptions. Physical appetites, especially acquired ones, often incite to injurious and destructive forms of activity. Even hunger and thirst are seldom accurately adjusted to the demands of perfect health.

In speaking of the form of the nervous process which underlies sensation in general, we saw that nothing is known about it. That which underlies physical feeling is equally mysterious. At first it would seem that the process might well be one and the same, and that the perception of the quality and the having of the feeling are double only in consciousness. In that case we should have a complex reaction against the single process. Nevertheless, the facts of analgia show that the perception can take place without the feeling. In the use of anæsthetics, it is often found that the perceptive function remains after the sensibility to pain has vanished. Even the nerves of touch

in the parts affected may remain active after all pain has ceased. These facts show either that there is a special nervous function for the production of feeling, or that feeling is connected only with a special intensity of the general nervous function upon which perception rests. The distinction is further suggested by the changeability of our likes and dislikes with reference to the same object. Acquired tastes, like those for tobacco and olives, are striking examples. In such cases the external stimulus and the perceptive element are constant, but the sensitive factor varies from one extreme to its opposite. Nor can we do much with the notion of intensity as the ground of feeling. If we find the ground of pain in too great intensity of nervous action, we ought to find the ground of pleasure in the opposite direction, and ought further to find a point of indifference between them. Generally, it would seem that the ground of both lies in the form of the nervous activity rather than in its quantity. The entire subject is in profound obscurity; but we need to guard ourselves against applying terms with psychological implications to the nerves, and then fancying that we have deduced the psychological idea from our physiology, and not from the terms employed. Thus, when we have referred pain to nervous exhaustion, the term exhaustion makes it easy to transfer our feelings to our nerves, and then we deduce our feelings from the nervous states with the greatest ease. We need equally to guard against the fancy that the nervous process which conditions the feeling in any way explains it. The feelings are not in the nerves, and are physical only in the sense of having a physical incitement.

The feelings which have a purely mental source are much more numerous and important. These do not arise from the organic functions, but from some conception or mental state. Thus, the aversion which attends the vision of a serpent, or of blood, or of any disgusting object, does

not arise from any pernicious effect upon the nerves, but from the significance which we attribute to the objects. The conception is necessary to the feeling. Again, the feelings of mirth, contempt, etc., arise from the relations of ideas, and would disappear with the ideas. The grossest insults may be heaped upon us in an unknown tongue, without disturbing our equanimity. They must pass into the idea before they can awaken feeling.

No satisfactory classification of these feelings exists, and any detailed description would be superfluous. Instead, then, of seeking a new classification, we shall do better to confine ourselves to a few general points of view. In any case, feelings are understood in themselves, and not in their classification.

The physical organism has conditions of existence, which may be furthered or interfered with from without. Such furtherance or interference results in pleasure or pain. Again, there is an immanent law of development in the organism, whereby its unfolding is determined. According as this inner tendency is helped or hindered, we experience pleasure or pain. A widely received doctrine of the mental feelings attempts to explain them by applying this analogy to the mental organism. The mind, too, has conditions of well-being, and an immanent law of development; and whatever meets these conditions or obeys this law gives rise to pleasurable experiences, while anything of opposite character gives rise to opposite experiences. A free and facile performance of mental functions results in feelings of pleasure or satisfaction, while opposite feelings attend repression and failure. As the body by its constitution demands an alternation of rest and action as a condition of its well-being, so the mind makes the same demand as a condition of its well-being. When the waking mind is inactive, or rather empty, there result feelings of tedium and ennui, which may rise to positive distress. The same

mental constitution calls for a certain measure of variety and uniformity of experience as a condition of pleasure. Monotony becomes wearisome; too rapid change is confusing and painful. Within certain limits novelty is pleasing, and within certain limits the familiar is pleasing.

This fact is the basis of the claim of Aristotle, reproduced also by Hamilton, that any unimpeded exercise of energy according to the laws of the faculty in question is pleasurable, while the opposite is painful. Confused and obscure ideas are disagreeable; clear and distinct ideas are agreeable. The reduction of unrelated phenomena to rational order is pleasing; the inability so to reduce them is displeasing. The discovery of unity in the manifold, or of harmony in the discordant, is pleasing; the failure to find these elements is displeasing. In like manner, success or failure, furtherance or hindrance, in our activities, becomes a ground of feeling. Self-assertion and self-realization are the deepest necessities of life. Whatever furthers them produces complacency; whatever hinders them gives rise to feelings varying from slight vexation to intense indignation. In all of these cases our tendencies are furthered or thwarted, and we feel pleasure or pain accordingly.

In this conception mental feelings, like the physical, are functional; that is, they arise from the performance of mental functions, and are pleasing or not as the form of activity agrees or disagrees with the nature of the faculty in question. There are many feelings of this kind. They spring directly either from our constitution or from the form of the mental function. Curiosity is a case of the former; the excitement of gambling is a case of the latter. There is an intenser feeling of life connected with emotional excitement, which is desired for its own sake; and the desire for it may become a decided craving. Much of our interest in games of chance, in novel-reading, in the tragic drama, and even in some phases of religious experience, has its root here.

But when this conception of feeling as functional is made universal, it becomes formal and empty. It is thus formal when applied to the large class of feelings which depend, not on the form of the mental function, but on the nature of the mental object. This is the case with all æsthetic emotion where the feeling is due to some quality of the object, and where, so far as we can see, there is no furtherance or hindrance of mental functions. Even our delight in knowing depends less on satisfying our constitutional curiosity than on finding something worth knowing. Knowing, simply as a form of mental activity, may be exercised upon the most insignificant objects. It is the nature of the thing known which is the great source of feeling. If, then, we insist that feeling is due to agreement or disagreement with the laws of the mind, we must either make those laws include the object, or we must admit that often the only warrant for affirming an agreement or disagreement is our theory that feeling must be explained in that way. In either case the view becomes formal and barren.

Without inquiring further why we feel, we pass to consider several important classes of feeling. These are (1.) the ego feelings, (2.) the social feelings, and (3.) the impersonal, or disinterested, feelings. The last class consists of the æsthetic feelings, the ethical feelings, and the religious feelings. Perhaps it would be better to regard these as three classes of elements which enter into our sensitive life, as in actual experience these elements often enter into one and the same emotional state, and seldom occur in isolation. They are proposed simply as points of view from which the feelings may be advantageously studied.

In one sense all feelings which relate to the personal interests of the individual are ego feelings. Personal pains and pleasures, dislikes and aversions, exist only for their subject. But we prefer to reserve the title of ego feelings for another class, which depends not upon consciousness,

but upon self-consciousness. These feelings are not elements of passive pain or pleasure, but exist only through their relation to our self-esteem and desire for self-assertion. The ego is at once their subject and their object. Hence they are pre-eminently the ego feelings.

It is this relation to self which chiefly determines the value of an experience in the developed mental life. Both pleasures and pains, except purely physical ones, depend to a great extent on being connected with self as their subject. Thus, an athletic feat, a long tramp, a perilous climb up a mountain, are never estimated by the passive sensations attending them, but by the exaltation of self-feeling which results. We have a sense of power and efficiency, and delight in the deed as our own. Most of our plans and aims also have their value, not in their inherent power to please us, but in the fact that they are ours. Few of our experiences have value in themselves, as passive gratifications of our sensibility; their value lies rather in the element of personality which we have put into them. It is oversight of this fact which led to the strange proposal of Bentham to form an arithmetic of pleasures and pains, whereby the value of any experience could be determined. The sum of the pleasures minus the sum of the pains equals the value of the experience; where pleasure and pain are supposed to be passive affections of the sensibility. This arithmetic vanishes when all significant values in experience are seen to be constituted by their relation to self in self-consciousness. The same oversight underlies the shrewd surmise that probably a pig's lot is happier than that of a man. If there were nothing but passive gratifications of sense in life, this might well be the case. To increase knowledge may well increase sorrow, and the freeman may have a harder lot than the slave. But with men the comfort of ignorance, or slavery, or piggishness, is not valued in comparison with the exaltation of self-

feeling and self-respect which comes from knowledge and freedom and manhood. Indeed, the distinction between passive and active pleasures is so marked, that it has often been a dogma in ethics that the former are valueless and unworthy of desire and effort. In the former, the self is passive; in the latter, it is active and self-determining. The passive pleasures are seldom without a suggestion of the animal.

The same reference to self underlies a great variety of feelings of a less exalted kind. Apart from this self-consciousness, the pains of poverty, of social slights, etc. would be a vanishing quantity. On the other hand, the satisfactions of pride, vanity, and ambition would be nothing without the same reference. To secure the exaltation of self-feeling we are ready to submit to any passive discomfort or to make any sacrifice. Failure in this effort is the world's great source of grief and heart-burning. It is this conception of self-consciousness which has led to the familiar onslaughts upon it as the sum, or at least the root, of all evil.

Since we can interpret others' experience only by our own, a broad and intense ego-life is the condition of any full and deep social life. It is only in our own consciousness that the meaning and value of life and its experiences can be revealed; and without the knowledge of these there can be no sympathy for others and no understanding of them. Selfishness does not consist in valuing ourselves, but in ignoring the equal claims and rights of others.

An equally great variety of feelings arises from our social nature. Here belong the social impulses and sentiments, in all their diversified forms. Psychological doctrinaires have displayed great ingenuity in deducing the social elements of our nature from selfish necessities. An artificial and fictitious man has been constructed at great cost of time and labor. This being has been endowed with only

egoistic impulses, and then his creators have proceeded to turn him into a social and benevolent person. Being endowed with a desire for approbation, he seeks society that he may win approval. Having also a penetrating intellect, he soon sees that others are necessary to him in many ways; and his wise selfishness takes on the forms of benevolence. When this point is reached, the power and penetration of the psychological analysis are praised, and altruism is deduced from egoism. Unfortunately for this view, the social impulses manifest themselves so long before there is any hint of the profound insight presupposed, that it would hardly seem less absurd to claim that the cattle, or the ants, became gregarious in the same way. However possible it may be to reason out the selfish wisdom of social action, it is sure that the race did not develop the social impulses in that way. Man is naturally selfish, and naturally social and sympathetic. There is provision in our nature both for selfishness and for society and mutual help. The whim that the natural state of man is the war of all against all was the conclusion of a theory rather than the expression of experience. Man seeks man and delights in man far more than man wars upon man. This primal man who reasoned himself into society is a near relative of the men who emerged from inhuman isolation and made the social contract which figured so largely in the political philosophy of the last century. The real function of the various considerations of interest and mutual advantage which are appealed to, has not been to develop the social sentiments, but to extend their application beyond narrow family or tribal limits.

The provision for social and unselfish existence is seen, first of all, in the nature of all human love, whether conjugal, parental, filial, or the love of friendship. No one who has felt these emotions will ever view them as selfish; and no one else has a voice. It is also seen in the law of

sympathy. Unless hindered by some disturbing or paralyzing conception, sympathy is natural and necessary. The provision for social life is apparent also in the faculty of language. The great function of language is exchange of thought, and would have no meaning in a solitary existence. And thought itself is developed and continued only in and through society. Here the individual has his life; and here learning and science and knowledge have their abiding source and seat. It used to be a favorite problem with the speculators of the last century to know what a human being would come to if brought up in isolation. Plainly he would never become a human being at all.

The field of social relations is the sole field of the benevolent and malevolent impulses; it is, too, the great field of the ego feelings. Indeed human life in general exists only in society. Of course there can be no society without the individual as its unit; but the individual comes to himself only in society. On the one hand, we can understand others only by assimilating their life to ours; but, on the other hand, our own life is dormant until it is called out by the universal social stimulus. Opposite errors are traditional here. Some, forgetting that life must be experienced in ourselves before it can be found anywhere else, would make society the sufficient source of all individual experience; while others set the individual apart in a false self-sufficiency, and forget that without the social stimulus the mind of the individual would never unfold.

The ego feelings have already been referred to as constituted by their relation to self; but they demand society for their development. Obnoxious forms of egoism are made possible only by a comparison with others resulting in an assumption of superiority and an undue exaltation of self-esteem. Indeed, complete satisfaction is never reached until this superiority is in some way recognized by others. The self-worshipper takes little pleasure in subjective values

so long as they are unknown or unallowed by the rest of the world. There must be at least a prospective recognition; and no Mordecai can be tolerated at the gate. Pride or vanity is never content to be. It is never sufficient to itself, but lives on others' recognition. Thus it carries in itself its own contradiction and torment.

The æsthetic feelings are another form of feeling which has a mental source. They represent a satisfaction or dissatisfaction with our objects apart from their relation to our personal interests. Our feelings toward some things arise directly from our conception of their utility or inutility for us; other feelings are independent of this personal reference, and seem to depend upon an objective quality of the objects themselves. These are the æsthetic feelings; and in this sense they are impersonal and objective, or rather disinterested. The feelings previously described represent only a state of our sensibility, and are not objectified as qualities of their objects. In the æsthetic feelings the mind is contemplative and disinterested. We do not need the object; we do not prize it for its utility; we are pleased to find that the object exists.

The æsthetic feelings lie at the foundation of all æsthetic judgments; for these at bottom only express a feeling of æsthetic satisfaction or dissatisfaction with our objects. A scruple is sometimes raised as to the possibility of a judgment founded on feeling; as feeling is said to be subjective and particular, while the judgment must be objective and universal. But there is no reason why there may not be universal elements in the sensibility as well as in the reason. Again, many of our judgments do but express in logical form a content which can be realized only in the sensibility. All judgments of sensation are of this kind. They have the forms of logic, but they can be understood only in sensible experience. And ultimately our æsthetic judgments rest upon a fact of the same sort, an immediate

feeling of delight or aversion. Of course, this feeling must be wrought out into systematic form before a science of æsthetics can be reached; but without this feeling, the science would have no contents whatever. Perhaps it would be better to say that both intellect and sensibility are pure abstractions; the reality being the rational and sensitive soul. If this soul were only sensitive, it would never reach an æsthetic judgment; but if it were not sensitive, such judgment would be equally impossible.

Æsthetic feeling appears in various forms:—

The simplest form is in connection with sensation and movement. Colors, tones, odors, and rhythmic movement have an æsthetic value, both in themselves and still more in their combination, as in painting, music, rhythm, and the dance. It has been much questioned whether simple sensations have any æsthetic significance, or whether they are only organically agreeable or disagreeable. It is indeed difficult in these cases to separate the æsthetic from the simply agreeable; but that they have an æsthetic value is clear from the fact that in higher æsthetic effects they constitute a necessary part of the whole. Compare the colorless engraving with the painting; or the same music on different instruments. At the same time, the æsthetic value of tones and colors lies chiefly in their combination and symbolism. Melody and harmony please, not only by virtue of the separate tones, but also and mainly through the form of their combination. A piece of music played backwards, or even in different time, would give the same sounds, but not the music.

Æsthetic feeling further appears in connection with form and outline, especially as developed in drawing, architecture, and sculpture. Here we demand regularity, symmetry, and proportion, combined into an harmonious whole.

Still another phase arises from the perception of certain relations of ideas. Here belong the feelings of the absurd,

the ridiculous, the comical, the witty, and of fitness and unfitness in general. Here the effect is entirely due to the relation, and not to the ideas themselves.

Æsthetic feeling arises at times from the form, at others from the content, of our ideas. Symmetry, proportion, harmony, completeness, are examples of the former class. Truth, goodness, nobility, baseness, and vastness are examples of the latter. In this class æsthetics rises into the realm of ethics and religion.

Æsthetic feeling is especially aroused by whatever expresses or symbolizes the life, the aspirations, the solemn forebodings, the deep experiences of the soul. This is the source of our highest interest in the tragic drama. The æsthetic value of nature, also, lies chiefly in its deep symbolism of thought and life. Poetry in general is little more than a working out of this symbolism. Music also aims to do the same thing. The mind is pleased with whatever expresses thought or purpose, or with whatever gives form to its own inner life. This is the meaning of Plato's claim that the mind alone is beautiful; it also explains the claim often made, that the beautiful must be an adequate realization of an "idea." Even that which in itself is disagreeable or ugly may have profound significance because of its power to symbolize. Darkness and storm, the restless ocean and the desert waste, are illustrations. A broken column in a building is utterly ugly; in a cemetery, it may have a sad significance.

It is at this point that we find the significance of association for æsthetics. Association itself does not produce æsthetic ideas, but it largely conditions their application; for example, the human form as a simple figure in space could not lay claim to striking beauty. It acquires its chief æsthetic significance from connection with the life within. In itself it has beauty of symmetry, proportion, adaptation of parts and functions; but this is insignificant

compared with its symbolic value. The same is true of music. A melody in itself insignificant may affect us powerfully from being a national air, or connected with our past history, or associated with certain words and ideas.

The complexity of the sources of æsthetic feeling makes the æsthetic problem correspondingly complex. It also explains in some measure the diversity of æsthetic judgments. We find simply sensuous elements, purely intellectual relations, the opposition of form and meaning, and a symbolizing function entering into æsthetic experience; and any one of these may be emphasized to the neglect or exclusion of the rest. Hence, one-sided and often mistaken æsthetic judgments. In music, the intellectual and symbolic elements may be exaggerated, and the sensuous element neglected. The result is music highly intellectual and full of meaning, but needing an interpreter, and unable to please. Or, on the other hand, the sensuous element may be made supreme; and the outcome is a tiresome and cloying sweetness. So in art and literature, the form may be exalted above the content, or the content above the form; and in both cases the result is failure. A brilliant treatment is offered as the justification of an ignoble or worthless subject; and a good meaning is made to apologize for stupidity and awkwardness. For the highest æsthetic effect there must be a satisfaction of the entire nature. A worthy matter must be married to a fitting form. Diversity of æsthetic judgment is further due to the fact that the judgment is often not properly æsthetic. We may be pleased, not with the thing, but with the treatment, the technical skill, and very often with our own ability to detect that skill. Much apparent delight in music and painting is of this sort, and is really only a reflex of vanity.

Why do objects please us æsthetically? Various answers are given, but no one is adequate to a complete solution of

the question. Physiology offers to explain the elementary æsthetic feelings as the result of agreement or disagreement with the conditions of nervous action and physical well-being in general. Others have found the one principle of beauty in the perception of unity in variety, or harmony in the manifold. The further claim is made, that æsthetic feeling is built up out of agreeable or disagreeable personal feelings, which by association are connected with their causes. Thereafter the latter are viewed as beautiful or ugly. This is the utilitarian conception.

Physiological æsthetics has the full indorsement of the *Zeitgeist*, but is not so successful with analysis. Thus, discord is ugly, concord is pleasing; and the explanation offered is, that discordant sounds in some way transgress the conditions of nervous action, while harmonious sounds agree with them. Of course, if this were so, we should have no explanation of the mental effect; for we have seen that no nervous state explains any mental state as an analytical implication of itself; but allowing that nervous states may give rise to mental states, we may seek the ground of the æsthetic effect in the nerves. But it is very doubtful if this view is adequate. To begin with, there is no proof that a simple noise is more injurious to the nerves than a musical note; and especially there is no proof that harmonious sounds are especially advantageous to the nerves. The explanation is not only hypothetical, but the data of the explanation are hypothetical also.

Moreover, the view is far from being as simple as it seems. Suppose two notes to be struck which singly are not unpleasing, but together are discordant. We assume, then, that the nervous processes corresponding to the notes are in some way prejudicial to nervous well-being when occurring together. But in order that this fact shall exist for us, it must in some way affect us by the production of unpleasant feeling. We need then, first, a synchronous

production of the two notes; second, a production of unpleasant feeling by the abnormal nervous process; and, third, a distribution of this feeling over the notes which thus appear as discordant or unpleasing. Our delight in harmony would be explained in the same way. We should have the separate nerve processes corresponding to the notes, then a resultant nerve process which, without modifying the others, should be particularly grateful to the nerves, then a production of pleasant feeling by this process, and, finally, a reference of this feeling to the original notes.

Now, remembering that the data of this explanation are hypothetical, it really does not cast a very strong light upon this simple problem. And if two nervous processes can give rise to a third process different from either, and grateful or otherwise to the nerves, it does not seem impossible that two sensational processes might give rise in the mind itself to a third process, the æsthetic feeling, and that without having recourse to the nerves. We renew our protestations of appreciation of physiology, but fail to see that it has cast much light upon this problem.

The attempts to make æsthetic feeling depend upon some single principle, as the perception of unity in variety, overlook the elementary æsthetic feelings altogether, and the complexity and manifoldness of the æsthetic scale.

In the utilitarian conception, it is not plain whether æsthetic feeling is the perception of utility, or arises from it. Neither view finds any justification except in the experience of the unimagative and prosaic. Apart from such pathologic cases, the love of the beautiful, at least in the form of personal adornment, is a marked feature of humanity, even in its savage and infantile stages; and Mr. Darwin has made it a factor even in animal development.

The best answer to the question why objects please us æsthetically lies in the remark, already quoted from Plato,

that the mind only is beautiful. That is, the soul delights in itself; and hence it is pleased with whatever expresses, or embodies, or symbolizes its own inner life. Regularity, symmetry, proportion, harmony, please because they accord with and express the orderly nature of intelligence. The great symbolisms of light and sound, of sky and sea, of hills and plains, are of perennial significance; as only in them do the dumb souls of men find adequate expression.

The boundaries of the æsthetic realm do not admit of being sharply drawn. Accordingly, there is no agreement as to where the æsthetic scale begins or ends, or as to its internal divisions. Many deny æsthetic character to sensations altogether, and confine æsthetics entirely to intellectual relations. Still, as we have seen, high æsthetic effects are often dependent on purely sensible effects, either directly presented or indirectly suggested. A landscape in outline is lifeless. The color, the light, the warmth, the life, must be there to produce any marked effect. The attempts to divide the æsthetic scale into sharply separated divisions is equally unfortunate, and leads to various arbitrary dicta on the part of critics, few of which are recognized by unsophisticated feeling.

In truth, the æsthetic scale is highly complex, and stretches all the way from the agreeable in sensation up to the sublime in thought and action. In the negative direction, it extends from the disagreeable in sensation to the terrible and awful in thought and action. Nor is it possible to draw lines upon the scale where one form ends and another begins. As the colors of the spectrum shade into one another and yet are different, or as heat and cold are antithetical ideas and yet have no fixed frontier, so the system of æsthetic ideas presents a set of fixed and graded conceptions without allowing us sharply to determine their precise limits.

Attempts to reduce the æsthetic feelings to some single form abound. In such cases, the classifying and simplifying tendency of the mind plays a trick upon us. The very essence of a feeling is to be felt; and feelings which are felt to be different are different. But when feelings show some common element, we gather them into a class, from which their specific differences have been excluded; and then all the conditions for a penetrating psychological analysis are present. We forthwith mistake the logical universal for a reality; and then conclude that the specific feelings are all phases of this one universal and undifferentiated feeling. The analysis is complete and successful. We should reason with equal profundity, if we deduced all specific horses from the universal horse. This is the perennial mistake of sensationalism. Quite unconsciously, the universal is taken as the starting-point, and then real experience is deduced from it. But it is well to remind ourselves occasionally that there is no feeling in general; that the reality is always specific feelings, each with its specific quality and coloring; and that no amount of logical classifying can abolish these differences, or make them other than they are. Even our æsthetic feelings are complex and manifold, and vary with the objects themselves. There is no common beauty, but each beautiful thing is beautiful in its own way. There is beauty of form, of tone, of color, of sentiment, of action, of character; and none of these have any common element beyond the fact that we delight in them all. At the same time, our delight has a specific and peculiar quality in each class of cases. But psychology has not yet freed itself from the blunders of scholastic realism.

The moral feelings agree with the æsthetic feelings in expressing a satisfaction or dissatisfaction in the presence of certain conceptions. They differ especially (1.) in the sense of obligation which is inherent in the moral feelings,

and (2.) in the sense of merit or demerit which attends the resultant action. The perception of the good carries obligation, or contains an implicit law for conduct; the perception of the beautiful does not. The former commands the will; the latter delights the sensibility. Nevertheless, the two run closely together. The good is the highest beauty; and the beautiful in action and character is the morally good. If, then, we were seeking for the ideal law of life, it would be indifferent whether we sought for it as the beautiful or as the good. Many of our so-called moral judgments are properly æsthetic, referring to the beauty or harmony of the life, rather than to the merit or righteousness of the person.

Ethical study may take two directions. First, we may study the actual manifestation and development of the moral nature: this is the psychology of ethics. Second, we study the conditions or postulates of an ethical system assumed to be rationally consistent and defensible: this is the metaphysics of ethics. Our present concern is with the psychology.

The universal ethical fact is the recognition of a distinction between right and wrong in conduct, and a resulting sense of obligation. Traced to its root, this depends upon a feeling of approval or disapproval in connection with the aims and principles of conduct. As long as these are unrecognized, there is no moral life. As long as they are unclearly perceived, there are only the germs of a moral life. When they are brought out into clear recognition, the self-conscious moral life begins. Out of this basal feeling, the ideal of life and the law of conduct spring.

It is often objected that feeling cannot be a basis for ethics, because feeling is particular while ethical law must be universal, and hence must be founded in reason. This is merely a war of words. If there were no sentient beings, all conduct would be indifferent; and when we ask for the

right principles of conduct, we can only represent the motives and aims of action to ourselves, and wait for the immediate feeling of approval or disapproval to manifest itself. As to the universality, the fact is not made universal by calling it an utterance of the reason; nor is it made less than universal by calling it feeling. Its universality depends upon its content, and not upon its psychological classification. It is indeed true, that if man did nothing but feel, there would be no science of ethics; but it is equally true, that if man never felt, there would be no science of ethics. We have here the mistake, already referred to, of holding feeling and reason apart in unreal separation.

Simple harmony with the ideal is beautiful even if constitutional, just as good health may be. The failure to reach such harmony is unsatisfactory, however meritorious the person may be. The ideal commands perfection and condemns all below it. Hence many have thought that obligation might transcend ability. This, justice rejects with indignation; and yet it is the most prominent fact of moral experience that to do the best we can satisfies no one. This is due to the fact that the ideal as such is æsthetic, and takes no account of ability, but only of perfection or imperfection. Ethics, on the other hand, while getting its law from the ideal, is forced to limit its actual requirements to the ability of the agents. This double point of view underlies some chronic disputes in ethics and theology.

The secondary moral feelings are those which result from obedience or disobedience to moral law. When the action is our own, we have the sense of merit or demerit, of personal worthiness or baseness, of remorse, shame, etc. When the action is another's, we have feelings varying all the way from profound esteem and approbation to intense indignation, according to the circumstances. These feelings are highly variable, and admit of all degrees of in-

tensity, according to the nature of the deed itself and the grade of moral development.

The double standard referred to produces a double set of feelings to correspond. When we compare ourselves with the ideal, we have a feeling of imperfection and unworthiness. This arises from the opposition between what we are and the ideal perfection. When we measure ourselves by the standard of ability, we may have a feeling of innocence or of guilt, of merit or of demerit. These feelings depend upon the relation of our deed to our power to do. The former set of feelings may exist in an intense form without any sense of guilt. In general, they are found only where there has been a good degree of moral development.

Of course deductions and reductions of the moral sentiments abound. The method employed is that dwelt upon at so great length in a previous chapter. They are identified with their conditions or with some of their attendants, or something else is called by their name, or their successive and conditioned genesis is identified with the transformation of non-moral elements into them. Heredity and the chemistry of ideas also play their well-known part; and finally comes the great act of faith which is the supreme condition of success in the transformation. The procedure is purely verbal. If we begin with a soul capable only of selfish, or social, or prudential considerations, there is no way of getting beyond them. Our sense of duty, then, must be identified with pity, or sympathy, or fear of punishment, or fear of public opinion, or desire of esteem, or considerations of prudence, or some other non-moral element. But this identification is impossible; for the sense of duty refuses to coalesce with any of the things mentioned; and the surest proof that different feelings are different is the fact that they are given as different. But if we set out to deduce the moral sentiments from non-moral antecedents, the data lie dead and motionless as long

as the soul is supposed to have fully expressed itself in them. To reach any progress, we must once more assume that these data are in interaction with a mental nature which transcends them, and which under certain conditions manifests itself in new forms. Without this assumption, our deduction is as absurd as the attempt to deduce chemical action from atoms whose nature is supposed to be exhausted in simple gravitation. Who knows what might not happen in such a case, if the atoms had much experience?

Verbal ambiguity, also, is ready to help us out. We can define beneficence as doing things for others, and this we may call altruism. Then we may show that a wise egoism must lead us to do things for others; and thus we transcend egoism and deduce altruism. Of course, such altruism is purely egoistic, and has absolutely nothing in common with that principle which commands us to let others' rights and happiness weigh as much as our own; but we may call it altruism in a special sense, and then quietly drop the limitation. We may not notice the fallacy ourselves; and our readers will almost certainly fail to do so.

Finally, we may attempt to deduce morality by confining our attention to external conduct. What we think right or wrong in outward action depends very largely upon custom, tradition, and society in general. Society, then, may be called the source of the individual's code, and hence of his morality. Right and wrong, then, are the creation of society. But external conduct is not the sum of morality; and this view has to provide for the internal sentiments and sanctions connected with the notion of duty. For this it can only fall back upon the chemistry of ideas, and seek to transform non-moral elements into moral ones; or it must attempt to identify our sense of duty with fear of punishment, or of public opinion, etc. In either case there is utter failure.

The actual development of moral sentiments and ideas is a slow and complicated process, into which all the factors enter by which the associationalist seeks to explain it. The moral element itself is originally given only as a germinal potentiality, and not as a completed and systematic insight. Its right development depends upon a great many favoring circumstances. Attaching fundamentally to the aims and motives of conduct, it has but little scope until these aims and motives have acquired some complexity and richness of content. It must next be specified into codes of life and conduct which shall correspond to the ideal law within. In this process there is the most complex and profound interaction between the moral and the intellectual nature. Our experience of consequences, our knowledge of tendencies, our underlying world-view, all enter into the formation of our codes. This accounts in great measure for the discordant moral history of mankind. We believe in an ethical development both of the individual and of the race; we deny only that this development is possible without assuming an original ethical germ, or predisposition, in the mind, which contains, not indeed an unconditioned principle, but an immanent law, of moral development.

The religious sentiments are closely connected with the ethical. They differ especially in this, that the former are explicitly directed toward some supernatural being or beings conceived as personal, while the latter do not immediately contain such reference. When the idea of God is given, the moral law is almost inevitably thought as expressing His will; and this has led many to claim that the moral nature immediately reveals a Holy Person as its author; but this is an exaggeration.

Since religious feeling is thus connected with the conception of supernatural personality, we have first to inquire where this conception comes from.

Experience does not reveal its source. History finds it

everywhere present; and wherever we find man, we find him in possession of it in some form. Nor is it derived from argument; for all argument presupposes its existence. The so-called proofs of the being of God originate nothing, but attempt only to determine the authority of an idea already existing. Religious progress has never consisted in finding the idea of God, but in elevating and purifying that idea. The idea of the supernatural, like the idea of right and duty, is universal; but, like that idea again, its content is not clearly defined. Both ideas have a formal position of authority, from which they will never consent to be degraded; but both ideas also may be very imperfectly conceived.

Only hypothetical answers can be given to the question. One of these is that the idea of the supernatural arises from the deification of natural objects, as the sun, the heavens, etc. This does not much advance the matter, as it amounts only to saying that the idea arises from regarding the natural as supernatural. It presupposes the idea of the supernatural in at least some vague form. Sense objects must always be taken as they appear, until some transforming idea is found elsewhere. If we have darkly lurking in us some conception of divine power, it would be easy to regard sense objects as symbols thereof; but until then the sun can only be taken as a luminous disk, the idol as a stick or stone, and neither can be regarded as divine.

Another answer has been that the idea of a supernatural realm first arose through the phenomena of dreams and apparitions. They suggested the notion of a ghostly existence, and, when the idea once got afloat, it was speedily taken up, and by degrees wrought out into the various forms of religious conception. These are all sublimated forms of an original belief in ghosts. Such a view might be entertained if it were demonstrated that the supernatural in the religious sense does not exist; but even then we

could not explain the universality of the belief without assuming that there is something in human nature which demands it and to which it corresponds. It would require too much faith to believe that a conception purely adventitious and fictitious could secure such spread and pre-eminence.

At the opposite extreme is the view that the existence of God is immediately revealed, either in feeling or in intuition. This view arises from the failure of other views, rather than from any psychological observation. Neither the feeling nor the intuition can be pointed out. A feeling as such is only a state of the sensibility, and can only inferentially give information about objects. That we have no such intuition appears from the fact that men have generally sought to prove the existence of God. No one argues to prove what every one immediately sees.

The last view must take on the following form. The human mind is such that as the outcome of its total experience it forms the conception of the supernatural, not as the result of conscious inferential processes, but as an expression of its own needs and nature. As the result of some sensations, we posit a world of things; as the result of others, we posit a world of persons; as a result of our total experience, we posit God. The result is not the outcome of logical compulsion, but of a certain psychological necessity expressed, in the nature of our intelligence. It is not made or deduced, but grows out of life itself. This view is the only one which clearly accounts for the universality and persistence of the idea.

But with the bare affirmation of the supernatural, the religious problem is by no means solved. The idea has next to be defined so as to meet the demands made upon it. In this work all the factors of our complex nature work together. Each faculty has its special ideal, and God is the ideal of the whole nature, or the ideal of ideals. The intellect demands unity, and contributes its ideal of

perfect reason and insight. The conscience furnishes its ideal of perfect righteousness and holiness. The æsthetic nature furnishes its ideal of perfect beauty and harmony. The heart furnishes its ideal of goodness and love. These are all united in the thought of God, the ideal of religion. When this is impossible, there is discord in our nature, with resulting dissatisfaction. As long as any claim of heart or conscience or intellect is unrecognized, there can be no abiding peace. But when all the claims of our many-sided nature are united in the thought of an all-wise and holy God of love, our whole nature is at peace, and each faculty finds its claims at once recognized and assured. The intellect finds its highest support and warrant in the thought of the Eternal Reason at the root of things. The conscience rests secure in the thought of a throne of righteousness which can never be overturned, a Holy Will which can be neither defied nor mocked. The æsthetic nature finds its full satisfaction, and the heart finds an object worthy of everlasting love. The clearing up of the idea has been a long and complex process, into which many factors have entered, the most prominent being the Christian revelation. But the implicit aim of the process has been to reach a religious conception in which all the demands of our nature, volitional, æsthetic, affectional, and intellectual, should find at once recognition and fulfilment. A great variety of feelings and interests lead to the religious conception; and it in turn reacts upon them, and raises them to a higher form of development, and gives them greater power. When the conception is unworthy, it reacts upon the life, sometimes with an awful force of degradation, and sometimes it leads to a blighting of the religious impulse and a withering of the emotional nature.

The feelings thus far considered are primary, that is, they spring immediately from experience without the need of any mental work beyond that involved in the experi-

ence itself. But after they have been experienced, they may be conceived as possible in a future experience, and thus may give rise to desire and aversion, hope and fear. When they are connected with the thought of their causes, these also become objects of desire or aversion, hope or fear. These feelings are conditioned by simple experiences of pain or pleasure in past experience, and so far as they apply to objects they depend upon the conception of the objects as related to our well-being. Where there is no knowledge, neither desire nor aversion, neither hope nor fear, is possible. The desires themselves admit of all degrees of intensity; and according as they are gratified or not, they give rise to a boundless variety of feelings, both pleasurable and painful.

As thus understood, the desires are plainly secondary, being conditioned (1.) upon previous experience of pain or pleasure, and, (2.) as far as they relate to things, upon a knowledge of the causes of those experiences and of their relation to our own interests. The desire for power, wealth, place, etc. is entirely dependent upon their relation in some way to our happiness or purposes. Simple possession as such counts for nothing, even with the miser. If it were not for the gratification, implicit or potential, in his hoards, the miser would lose all interest in them. But, as in the fixed order of life the connection between the objects of desire and our gratification is tolerably constant, the former seem often to be passionately desired for their own sake. The love of money is a striking example. Nevertheless, the secondary nature of such objects of desire is manifest.

A dispute exists as to the object of desire. Is it the pleasure, or the thing which gives it? For partisan reasons, it has often been claimed that the object of desire is always pleasure, and that the object is desired only for the pleasure it gives. Amount of pleasure being equal, one

thing is as desirable as another, or, as Bentham put it, "push-pin is as good as poetry."

The claim in this form assumes the commensurability, or rather the essential identity, of pleasures. This rests, in turn, upon a scholastic hypostasis of a class term. Pleasure is pleasure, no doubt, and so are metals metals; but, as belonging to a common class in the latter case does not exclude incommensurable differences among metals, so belonging to a common class in the former case does not exclude specific and incommensurable differences among pleasures. In fact there is no common pleasure to which all things minister in varying degrees, and by which their worth can be measured. This is purely a fiction of doctrinaires who have eyes only for their own theory; or rather it is the old scholastic blunder of mistaking the logical universal for the common element out of which particular experiences are made.

The question whether we desire the thing or the pleasure it produces further assumes that these objects are separable in reality, which is far from being always the case. When we are dealing with external objects which have only a utilitarian value, the separation is possible; and the object is desired because of that value. But when we are dealing with æsthetic objects, or our own powers and faculties, the separation is impossible. Do we desire the beautiful object, or only the delight in beauty? Do we desire to know, or only the pleasure of knowing? In such cases the suggested separation is absurd. To be sure, if we lost æsthetic or intellectual interest, we should lose the corresponding desires; but the desires themselves have no meaning when separated from those objects or mental functions in which alone they are realized. We conclude, then, on the one hand, that nothing would be desired if there were no pleasure connected with it, and, on the other hand, that this pleasure is often so connected with the thing as to have no

meaning when separated from it. The pleasure is but an evaluation of the thing in question, and like all values presupposes the thing.

The relation of feeling and desire to other objects is highly variable, especially in intensity. We can repress or exalt feeling, and we can direct desire. The physical feelings may change from pleasure to pain, or conversely, with the same object; and many of our mental likes and dislikes are equally unstable. Practice and habit make many things agreeable, and even necessary, which at the beginning were positively distasteful. The development of society shows similar changes, especially in a willingness to work. In a consciousness not preoccupied with aims, plans, ambitions, ideals, the passive emotional elements would be fairly constant, at least in character; but the actual consciousness of mature life is thus preoccupied. The mind cares less for passive satisfactions than for the feelings which attend active self-assertion, or self-realization. Hence the leading interests of the mind are connected with those objects or aims to which it has given once for all an abiding value, or which it has made the standard of its action. Here the interest increases with the self-devotion; and the devotion grows with the interest. Such a state of mind is more than a simple desire; it represents a fundamental interest or disposition of the mind. It is in the nature of these interests that character is especially revealed. They modify profoundly the nature of the emotional life, and give it a general direction.

The feelings, then, are not invariable outcomes of their cognitive conditions, but to a very considerable extent admit of direction and control. This control, however, is not immediate, but indirect, through the direction of attention. The feeling which cannot be driven off by immediate volition can be outflanked by directing the attention elsewhere. And here the fact appears, that there is an ideal

order implicit in the soul, according to which the feelings should be regulated. We demand that we feel toward our objects in proportion to their rank and worth. To be interested solely in physical goods, is the mark of an animal life. To be enthusiastic over the insignificant, is a form of folly which finds its perfection in the fool. To be cold and indifferent toward the highest, indicates either an atrophy, or a distortion, of the emotional nature. The indifferent must be treated with indifference; the commonplace must not be exalted; enthusiasm and devotion belong only to noble objects; and wrath must be reserved for injustice, baseness, and degradation.

Experience first acquires living reality in feeling. A mental life in which ideas should succeed one another while the mental subject remained utterly indifferent, would be utterly mechanical and meaningless. A volitional life of equal indifference would be equally worthless. These mental functions become personal and significant only as our feelings and interests inform them with life and meaning. And, in general, all values and all goods exist as such only in the sensibility. Apart from this, there is no reason for desiring one thing rather than another, or for saying that one thing or state is better than another. Will and understanding have no significance except as instruments of this throbbing and aspiring sensitive life.

The desires and their opposites form the transition from knowing to willing. In feeling and knowing, we have the condition of desire; and in desire, we have the condition of proper volition. Our feelings and interests are the deepest thing in us. They furnish the great impulses to action, and they also outline its direction. The great distinction between the human and the brute mind lies less in the cognitive faculties than in the motive powers. Man can interest himself in truth, in righteousness, in beauty, in a

great variety of ideal aims, which thus become the norms and guides of his action. For these basal interests, the intellect is simply instrumental, and the will is merely executive. Because of this relation of the desires to volition, they have often been classed together, but improperly. A desire, as a state of feeling, has no element of will in it; but only the conditions of willing in a volitional being.

The aim of this chapter has not been to furnish a classification of feelings, but to describe the various elements which enter as constituent factors into our emotional life. Of course, it is not meant that they occur in this separateness in experience. Actual sensitive states are variously compounded, and form a complex web into which many forms of feeling enter.

CHAPTER VI.

WILL AND ACTION.

THE spontaneous consciousness of the race as revealed in language distinguishes a realm of mental passivity and one of mental activity. In the former, we are acted upon; in the latter, we act. To the former belong all the affections of the sensibility, and the rise and association of ideas. To the latter belong thinking proper, and all activity directed toward external objects. The same spontaneous consciousness has further distinguished from knowing and feeling a third great form of mental manifestation as willing. This is the next subject of our study.

The assumption of willing is so interwoven into thought and speech, that language would be wrecked by its removal, or at least very greatly modified. Hence, no psychologists venture to deny the existence of willing as a form of internal experience, though they differ widely as to what the will may be. Some, as Schopenhauer and Hartmann, extend willing even to unconscious activities; others, as Spinoza, and, to a great extent, Leibnitz, regard it as only a form of cognition; and still others, as Herbart, regard it as the form of interaction among our ideas,—a view which has been modified by some physiological psychologists so as to make will the form of interaction among the nascent motor impulses in the nerves which are supposed to attend our mental states. All of these views, however, are deductions from some general metaphysical or psychological theory, rather than formulations of psychological facts. We shall do better to begin with the facts.

Not all of activity is volitional. In one sense, all forms of mental experience, including even sensations, are modes of action; as they express a mental reaction against either external or internal stimuli. The mind when passive is not properly inactive; but the form of its activity is determined by its circumstances, according to some fixed law. Popular thought, however, recognizes activity only where some external change is produced, or where the mental current is changed or directed by volition. We are said to be passive when the ground of our state is other than ourselves; and active when we ourselves are that ground.

But not all of this activity is volitional. A good part of our external activity is of a reflex nature, and follows its antecedents by uniform law. Within the mind, also, the desires and appetites form a complex series of impulses to action, which tend of themselves to pass into activity without any volition of ours. A large part of our activity is of this sort, and may be called constitutional or mechanical. Its general characteristic is that it follows uniformly from its antecedents, according to fixed law. Such activity is not recognized by the common consciousness as volitional; and we can call it such only by a violent wrenching of terms. This has, indeed, been done; and all active reaction against stimuli, whether internal or external, has been referred to will. In this way even reflex action has been brought under the head of willing; but at the same time willing has been reduced to the plane of reflex action. All that such violent assaults upon language result in is the possibility of confusing the subject and the student.

This constitutional activity is highly complex. In connection with the body we have simple reaction, largely determined by the structure of the nervous system. We also have the physical appetites and impulses which furnish the ground for highly complex mental reaction. Within the mind, also, we have stimuli to action in the simple pains

and pleasures, and still others in the constitutional needs and impulses of the mind itself. These precede volitional activity, and are only partially subject to volitional control. There is no need to describe them in detail.

For these constitutional feelings which determine the mind to action we have no single word in English. We call them appetites, impulses, instincts, etc. Their nature is well expressed by their German name, *Trieb*, or *Naturtrieb*. This brings their driving or impelling character to light.

But above and beyond this mechanical or constitutional activity, the common consciousness recognizes a form of volitional action. This is not a wish, or a desire, or a constitutional impulse, though it may spring from any of these as a condition. It is also not a cognition or a judgment, though it may spring from these too. It is not a feeling of pain or of pleasure, though such a feeling may lead to it. In short, a volition is a volition, and cannot be explained or understood through anything else.

It is highly important to distinguish volition from its psychological attendants. Because volition is often based on a judgment, it is concluded that a volition is a judgment. Yet the two are sharply distinguished, both in their psychological nature and in their direction. The perception, or judgment, that a given course of action is wiser than another, is by no means a willing of the same. The former may exist without the latter, and the latter may contradict the former. Again, because volition often springs from desire and the accompanying impulse to action, it is often identified with desire. This is the traditional confusion. Nevertheless, these two also are distinct, both in their character and, at times, in their direction. A thing may be most strongly desired without being willed, either because we perceive the thing desired to be impossible, or in conflict with prudence, or with other plans, or with our ethical

ideas. In this case desire does not include a volition. Again, we often oppose our will to our desires, so as to repress, or at least resist them. All exhortations to prudence, to self-control, to righteousness, rest upon the assumed possibility of doing this. Here the volition is not only distinct from the desires, it appears as the expression of an energy directed toward their resistance and control. In short, we may sum the conception of will as it exists for spontaneous thought before any theories have been formed about it in the notion of a power of self-control. The will is the power which the soul has of controlling itself within certain limits, and a volition is an act of such control. Within those limits the soul can elicit or guide, intensify or repress, its activities, according to a preconceived rule, or for the realization of a preconceived end.

Volitional action is conditioned by consciousness. Unconscious action is regarded as volitional only by those who war upon the conventions of language; and even they understand volitional in some esoteric sense. The only clear notion which can be attached to unconscious willing is that of a necessary agent, which may act with adaptation to its environment, yet without becoming any less blind and mechanical. Even if we call such action spontaneous, we can only mean thereby that it arises from impulses which originate within the agent itself; but it is no less blind and necessary in such a case than when it is a reflex action against external action. Generally, volition implies foresight and intention; in all cases it implies consciousness. When the emotional or other disturbance is so great as to make foresight and intention impossible, or when there has not been sufficient mental development to provide for them, the activity is generally regarded as non-volitional.

In spontaneous thought, volitional activity is always regarded as free. This arises partly from the peculiar con-

sciousness we have in such activity of being the cause and source of the activity. In conducting, for example, a train of thought, we have a very clear conviction that it depends upon our volition whether it shall go on or not, and that the volition depends upon us. So with other activity which falls within volitional limits; we are clearly conscious that we can begin, continue, or end it, and that without compulsion of any sort, internal or external. The conviction of freedom arises also, and especially, from the ethical sense of responsibility. Under normal circumstances, and when undebauched by speculation, no one can help regarding himself and his neighbors as responsible for voluntary action; and, under the same circumstances, no one can regard any one as responsible who, by internal or external necessity, is shut up to a single course of action. The great form of excuse for wrong-doing is, I could not help it. These two facts lead us to refer our acts to ourselves as their responsible, that is, as their free cause.

The conception of freedom in spontaneous thought always involves the thought of a possible alternative. This view has the advantage of being intelligible and valuable. Many attempts have been made to define freedom so as to include necessity. Thus, that is free which is not coerced or impelled from without; or that is free which unfolds without hindrance its own nature. At the same time this freedom may be absolutely determined by some internal necessity. But when this inner necessity is extended to the entire activity, we have nothing of freedom left but the name; and it would tend to clearness if this were dropped.

This spontaneous conception of the will is not accepted by a large class of speculators. Some of these deny the existence of will altogether as a reality, and make willing only a peculiar phase of mechanical activity. Others admit

the reality of the will and the efficiency of volition, but claim that the will itself is determined. These admit that my volition determines within certain limits whether my activity shall begin, continue, or cease; but they deny that the volition itself is free. Both views agree in denying freedom, but differ in the underlying psychology. The difference, however, is much less than appears.

The first view conceives action as follows. All our ideas, especially when accompanied by feeling and desire, tend automatically to pass into action. In thinking, we notice a tendency to pronounce the words. In watching the movements of an athlete, we experience a tendency to imitate them. The desires show this tendency in a much higher degree. Here, then, is a basis of activity. When the idea or desire is single, it passes automatically into action. When the mental state is complex, then the constituent desires and motor impulses conflict with one another. This conflict appears in consciousness as reflection and deliberation. Finally, the strongest represses its competitors and passes into action. Such an act is called volitional. It is, however, purely mechanical; and its volitional character is but the reflex in consciousness of the mechanical conflict of the active impulses, arising from the ideas and desires in question. A volitional activity is essentially a complex mechanical activity, whose factors largely elude our knowledge. And since we are rarely conscious of all the impulses at work, we come to think that we determine our will; or that whatever the motives may be which compete for our assent, we have the casting vote. In this way arises the illusion of the freedom of the will, or rather of freedom in willing.

The second view differs from this only verbally; for its philosophy of action is essentially the same. Desires and impulses are introduced as constitutional elements, and are supposed to conflict, especially in the form of motives. In

this conflict the strongest always prevails, and its prevalence is the volition. The difference is plainly verbal. If, in addition to the prevalence of the motive, there were needed a special act of volition for the realization of the motive, we should have all our work for nothing. The result would be an incongruous mixture of freedom and necessity. The two views, then, may be treated as one. Both alike reduce action to a series of occurrences within us, according to the laws of causation.

This view is not founded on consciousness. The consciousness of freedom, of self-control, is admitted, but explained as an illusion arising from our ignorance of the forces at work upon us and within us. This is aided by regarding this consciousness as negative, as the lack of consciousness of compulsion; and then we are instructed that our unconsciousness of compulsion does not disprove its reality. It might be questioned whether our consciousness is thus purely negative; but at any rate our unconsciousness of compulsion does not prove that we are compelled. This extraordinary conclusion has not been unknown in the history of the debate. Nor is it at all clear how the consciousness of freedom could ever have arisen in this negative fashion. The conception of freedom is not the same as ignorance of causation; and if we suppose the mind to think only under the law of causation without positive experience of freedom, there is no way of transforming simple ignorance of causation into the conception of freedom. And if there were, then whenever we are ignorant of causation we ought to affirm freedom, which is absurd. We are then shut up, first, to admitting a positive consciousness of freedom, and, second, to declaring this consciousness to be delusive.

Sundry other difficulties exist for this view. To begin with, it provides only for positive impulses, whereas negative conceptions may decide volition. In particular, the

conception that an object is unattainable paralyzes action, while the desire may be even intensified by this knowledge. Facts of this kind admit of no adjustment to the theory. In the next place, the theory assumes a commensurability of impulses which is in the highest degree doubtful. A physical appetite, an emotional desire, an intellectual conception, a moral conviction, hardly seem to be commensurable elements. But we pass over its psychological foundation concerning which many other scruples might be raised, and call attention to several embarrassing implications: —

1. If the theory be true, action must follow immediately upon its antecedents. When the scales are loaded, there is no hesitation, no deliberation; but the heavier weight begins at once to sink. When two or more mechanical forces act upon a body, the resultant is at once and irrevocably declared. If, now, volitional action is to be brought under such mechanical laws, there is likewise no room for hesitation, or deliberation, or comparison of consequences. As well might a mechanical resultant compare the component forces, inquire which was the strongest, and finally decide for it. Yet all determinists have allowed a power of thinking twice, of reserving decision, of refraining from action. But if this be a real power, we have a power outside of motives and impulses, which is able to control both itself and them. If we say it controls them by bringing up some other motive, that only affects the manner of control and not the fact. A being which can control itself through motives must have control over the motives; and thus the fact of self-determination reappears, though in a special form. But if this be denied, the appearance of deliberation, of comparison of motives, reasons, etc., must be explained. It cannot be explained by the motives in consciousness, for, by hypothesis, these, if left to themselves, would pass at once into volition and action. By hypothesis, also, it is not due to any self-control of the mind. We must, then,

feign a series of impulses out of consciousness to account for it; and these too must be such as to make it seem as if we ourselves were controlling in the matter.

2. But this conception, if followed out, would lead to scepticism of reason itself. Reasoning similar to that employed in discussing the materialistic theory of knowledge would show that no system of necessity can construct a theory of knowledge and of error which shall not vanish into hopeless scepticism. The attainment of truth implies the existence of a standard of truth in the mind, and the possibility of directing our rational activity accordingly. The one thing which the truth-seeker must be on his guard against is the tendency to conclude hastily. He must, then, test his facts, criticise his processes, repeat his arguments, tear asunder the misleading conjunctions of association, and reserve his assent until the crystalline and necessary conjunctions of reason are reached. Where this cannot be done, there is no proper rationality, but only a psychological succession of mental states. And this is the result of the theory in question. One conclusion is as necessary as another, and as good while it lasts. Conclusions are not drawn by force of logic, but mental states are called up and shifted by the mental mechanism. There is no longer any distinction between truth and error; and everything sinks to the mere level of psychological facts, which as such are neither true nor false, but simply real or unreal. However we work the theory, we shall find it impossible to establish any standard of distinction between truth and error, and equally impossible to use it if we had it. Freedom is no less necessary to rational action than it is to moral action. Indeed, the purest illustration we have of self-determination is in the case of thinking. We direct and maintain attention, we criticise every step, and look before and after, until we reach the rational conclusion. And there is the advantage in considering the question in

this realm, that most of the confusion about motives is impossible here.

3. The theory involves the denial of all personal responsibility. Manifold attempts have been made to escape this result; but they belong, without exception, to the most abject and ghastly parodies of reasoning. The most approved device is that which makes conduct depend on character; but the speculator generally forgets to define character, and always forgets to inquire what character depends on. Sometimes it is claimed that our moral judgment of a person depends upon what he is, no matter how he became so; but this overlooks the double standard of moral judgments mentioned in the last chapter. Imperfection is charged upon whatever falls below the ideal; but responsibility belongs only to the free.

4. We have, then, a theory which cannot begin without disparaging the common consciousness of the race, and which is also highly unclear in its psychological basis. In the next place, it cannot go on without assuming a variety of impulses of which nothing is known except by hypothesis. Further, and finally, the theory is forced to break down reason itself, and to reject the universal sense of responsibility. Plainly, there ought to be very weighty reasons to warrant a theory like this.

The denial of freedom rests entirely upon theoretical grounds. These are, first, the impossibility of comprehending free action, and, second, the supposed demands of the law of causation. The first fact makes us unwilling to admit freedom; the second seems to make it impossible.

1. As cognitive beings, we have an undoubted interest in explaining all events according to some system of general laws. At the same time it must be remembered that explanation cannot extend to everything. It presupposes the existence of a set of facts and laws which furnish the conditions of explanation. These have to be taken for

granted ; and a demand that they shall be explained by the processes of which they are the foundation is the mark of a mind not in full possession of itself. A mania for explaining makes it impossible to understand the nature and conditions of explanation. Since, then, the very nature of explanation refers us to facts and processes outside of itself as its own foundation, we need not be concerned at finding in freedom a fact which admits of no deduction or comprehension,—a fact to be recognized and admitted, not deduced or comprehended. There is all the less reason for disturbance, when we see that this freedom is a necessary implication of that rational activity in whose interests explanation itself is undertaken.

2. But the law of causation contradicts the notion of freedom ; and, as the former is a necessity of thought, the latter must be given up. To this it might be said that the contradiction is doubtful. The law of causation says simply, For every event seek a cause. In this sense a free act has a cause as much as any other. Its cause is the free spirit. If we ask what caused it to cause, we are shut up to an infinite regress. The question, Why did the mind act thus ? is always ambiguous. It may mean, What were the reasons in the presence of which the mind acted ? and it may mean, What caused the mind to act thus ? The first question would be answered by recounting the reasons ; the second would be answered by the libertarian by denying that anything caused the mind to cause. It acted out of itself, and that must be the end of the matter.

It may be objected from the other side, that this does not meet the demands of causation. Freedom supposes a cause which, in given circumstances, may take either of two or more directions ; and hence the actual direction must be causeless. Here, also, there is a certain ambiguity, in that there may be reasons for the course taken in the presence of which the mind determined its action. The question

can be reduced to this: Does the law of causation demand that every cause must be uni-potential, or may there also be pluri-potential causes? The former assumption implies that uniformity in causation is a necessity of thought; and the latter implies that there may be causes which, within certain limits, can determine their own direction. The former supposition cannot be maintained; and the latter cannot, from its very nature, be understood. The only sense in which the law of causation is an absolute law of thought is, that nothing can arise from nothing, or that nothing can ever make itself into something. It does not decide that something must act uniformly, or that something can in no sense determine its own direction. Causation, as uniformity of action, is a postulate of our cognitive activity, but not a necessary principle. The question of uniformity or non-uniformity in action is one which cannot be speculatively decided. We can comprehend the one just as little and just as much as we can comprehend the other. The insight we seem to possess into the metaphysical possibility or impossibility is purely fictitious.

If, however, we insist on taking the law of causation absolutely, and referring every event to a determining antecedent, the law is seen to limit itself. Such a conception would lead to an infinite regress, in which the law of causation itself would be lost. To escape this every system of speculation has had to allow an uncaused being or series of beings, which simply are because they are. The law of causation has no application to them in their existence. Further, it is necessary to admit within this series, either an absolute beginning of activity and movement, or an unbegun activity and movement. Of this also the law of causation could give no account. It, too, would be a fact admitting of no deduction, but only of recognition. If, however, the law of causation compels the admission at one point, there is no objection of principle to recognizing such

facts anywhere in the world process, if experience seems to reveal them. The very utmost, then, that the speculative objections to freedom can lead to, would be a drawn battle; and the practical postulates of life and conscience would turn the scale in favor of freedom.

A series of minor objections exists, based throughout on misunderstanding. First, freedom is attributed to the will, which is then erected into an independent agent, and separated from both intellect and conscience and character. Then it is easy to show that the action of the will must be left to chance or caprice, that such a will is a dangerous, rather than a desirable possession, that there is no security that it will not at any moment reverse the whole tenor of the past life, etc. This is only a bugbear of misunderstanding. If anything is free, it is the soul, and not the will; for the will is only an abstraction from the volitional activity of the soul. And this free soul is also the knowing, prevising, ethical soul. It can, then, estimate motives and reasons; it can foresee consequences; it can compare its principles of action with the law of right. Hence, the soul does not act in the dark, but in the light. When it is objected that motives have weight, it seems to be assumed that, if man be free, motives should have no weight; whereas a free man who is also rational is just the one who will give every motive its proper weight. Nor does it follow, that what a free being can do, that he must do. He can be arbitrary and capricious; but he need not be and ought not to be. He can be inconsistent, but he ought not to be unless the consistency is in evil.

Nor do we get any relief from these things by invoking necessity. For in any case men are what they are; and they are arbitrary and capricious. If we suppose that they are so by necessity, we are certainly no better off than when we suppose that they have the power to do better. Again, good men often do fall into evil; and hence the

necessitarian must admit that necessity contains no assurance of consistency of character, unless we have an insight into the content or direction of that necessity. Apart from such insight, it is at least as assuring to hold that we can govern ourselves to some extent, and thus can maintain our loyalty to righteousness, as it is to hold that we are subject to some opaque necessity of whose content and direction we know nothing.

In theology this debate has often taken on strange forms for dogmatic reasons. In particular a distinction has been made between freedom of choice and freedom of willing; and determinism has been placed in the choice, while the will has been left free. Our choice is fatally bound by our nature, or by what we are; but we are free in execution. Hence the doctrine of moral inability and natural ability. In practical life, however, this doctrine seems to invert the difficulty. Freedom of choice does not seem to be so difficult a conception; the trouble lies entirely in realizing our choice in life. And for this the soul must be able to intensify its effort until it bears down all resistance. In our executive inability lies the weakness of life, rather than in a lack of power to choose the good.

The outcome of this sketch of the argument is this: (1.) We find freedom supported by a somewhat positive consciousness. (2.) We find it also implied in the principles by which men and societies live. (3.) We find its denial leading to scepticism of reason itself. (4.) Opposed to these facts we find the necessitarian argument, leading at best to no more than a drawn battle. We may therefore decide in favor of freedom. We may not view it as absolutely proved; yet it is certainly a necessary postulate of reason and conscience, and as such we hold it.

Volitional activity may enter to some extent into all the mental functions; and, on the other hand, some factors of the mental life are entirely withdrawn from volitional con-

trol. Thus the essential nature of the susceptibilities and the constitutional activities is independent of volition. The laws of mental procedure and of mental change and combination also admit of no volitional control. Such are the interactions of thought and feeling, the laws of formal thought, and the judgments of conscience. These are forever secure from volitional modification. These laws furnish a basis of uniformity of which the free soul may avail itself, and without which freedom itself becomes meaningless. Of the feelings we have little or no direct control. We govern them by directing our attention either toward objects connected with feelings we desire to arouse, or toward objects connected with feelings incompatible with those we desire to repress. In the intellectual life self-control is chiefly manifested in the form of attention, and the guidance of our cognitive powers toward a desired end. Attention may be non-volitional; but in all earnest effort it is volitional. An end is conceived, and our cognitive activities are governed with reference to it. So in all scientific investigation there must be most careful and persistent application of our energies and the most watchful supervision of the same. Whatever is valuable in knowledge is due to freedom. This of course does not mean that the mind can coerce its conclusions, but that it cannot reach trustworthy conclusions without strict self-control. The laws of thought do not of themselves secure obedience; otherwise there would be no error. In addition to the laws there must be an enforcement of them by the mind upon itself. In memory volition appears in a voluntary use of the laws of reproduction. In the constructive imagination the mind freely combines given elements. In all constitutional forms of activity volition enters as eliciting, guiding, repressing, according to laws inherent in the nature of the soul itself. Desultory executive volitions need no mention.

We see, then, that our freedom is far from absolute. It is limited, on the one hand, by our mental and physical constitution; and, on the other, by the intensity of the desires and impulses which it has to control. These might be so intensified as to execute themselves without permission from the will, and in spite of it. Within these limits freedom has its realm; and even these limits are not fixed. The outcome of volitional action is habit, fixed disposition, settled character. The soul may freely bind itself with chains which it can never undo. Herein lie the psychological significance of probation and the tragic element of freedom. Freedom may choose the seed, but it can neither determine nor escape the harvest.

This limitation of our freedom demands a word of final emphasis. There is an automatic as well as a voluntary element in human activity; and it is as impossible to exclude the former as it is to deny the latter. Corresponding to the one-sidedness of the necessitarian who makes automatism all, is the one-sidedness of the libertarian who makes freedom all. Even the claim that motives are reasons, and not causal or dynamic, cannot be unconditionally allowed; for while motives as conceptions are not dynamic, motives as springing from or expressing impulses, constitutional or otherwise, do exercise an influence upon volition, and may even defy our attempts to control them. There are fixed laws within, as well as without; and our conquest of mental realms, like that of physical realms, depends upon obedience to laws which we find, and which we can neither found nor abrogate.

CHAPTER VII.

CONSCIOUSNESS AND SELF-CONSCIOUSNESS.

IN the actual mental life, all its factors exist in complex synthesis from the start. In our study of that life, we must consider its factors successively, and one by one. The discussion of consciousness is not postponed to this point because consciousness is a late development in mental experience, but because it can be better dealt with after some study of the general factors of the mental life. It is not the psychologist's affair to construct the mental life, but to understand it.

Various definitions of consciousness have been given, but they all reduce to tautology, or else presuppose the thing defined. Thus Herbart defines consciousness as the sum of all the real or coexistent present representations; but the phrase "real and present representations" means precisely those of which we are conscious; for thereby alone are they constituted real and present. Consciousness has been further defined as a differentiating activity; but as differentiation in general does not imply consciousness, it can only be conscious differentiation which is consciousness.

Again, there has been a very general tendency to identify consciousness with knowing, so that to know and to be conscious are often used as identical. This is due partly to the looseness of language, and partly to the fact that there can be no knowing apart from consciousness, and no consciousness without some knowing. But this identification of the two has led to especial difficulty in determining the relation of consciousness to the other mental facts of

volition and sensibility; and very often they have been allowed to exist on their own account, and we are supposed to become conscious of them upon occasion. Others have gone still further in this direction, and have separated knowing itself from consciousness. This tendency is still further strengthened by mistaking the classifications of psychology for absolute distinctions. Hence, because feeling and willing are treated apart from knowing, it is assumed that they may exist apart from knowing. Consciousness is even erected into a faculty distinct from the rest, and having the function of inspecting their products. It would seem, then, that we know by the faculty of knowing, and become conscious of both knowing and the knowledge by the faculty of consciousness. In such views, consciousness appears as a kind of addition to mental states which might exist in their completeness apart from it. Those especially delight in this view who hold to latent mental modifications, unconscious cerebration, etc.; and consciousness almost appears at times as a disturbing and distracting element, rather than as a necessary condition of all mental states. But in spite of manifold assurances, it is quite impossible to tell what is left when the element of consciousness is dropped out of a mental state. Still others have defined consciousness as the knowledge the soul has of its own acts and states; but this view also limits consciousness to knowing, and supposes other mental states to exist as the object of this knowledge. In order to save the definition, we might point out that the soul's power to observe objects does not necessarily imply the power to observe its own operations; and to this second power we might give the name of consciousness. But in that case we should arbitrarily limit consciousness to one phase of knowing, and on no better authority, apparently, than the etymology of the word.

Led by these considerations, or rather warned by these

failures, we define consciousness as the specific feature, or condition, of all mental states; not, indeed, as something apart from, or antecedent to, mental states, but as that element which constitutes them mental states. It is that element which makes an act of knowing knowing, an act of feeling feeling, and an act of willing willing. It is not an act of knowing, nor an act of feeling, nor an act of willing, but the condition of all alike; or that factor without which they could not exist. Unconscious knowing and unconscious willing are phrases which defy all interpretation. It is, indeed, possible that the soul may perform many unconscious functions, but they would have no mental character.

Consciousness, then, is not a faculty in addition to other faculties, but an implication of the other faculties. It is not a light which reveals mental processes existing in themselves, but is rather an essential property of those processes. On this view, the field of consciousness is simply that of immediate experience without admixture of inference. It does not extend beyond the mental states and activities themselves, and the presentations which they mediate. What all this may mean admits of no further definition; it can only be experienced. The impossibility of deducing consciousness as the resultant of unconscious forces has already been dwelt upon. The fact admits neither of deduction nor of resolution into anything else.

Much of the uncertainty just dwelt upon rests upon the mistake referred to, of taking the classifications of psychology for absolute differences in the mental facts themselves. In truth, there is no such thing as pure knowing without admixture of sensitive and volitional elements; and just as little is there any pure feeling or willing apart from cognitive elements. The simplest mental fact is complex; and the elements into which we break it up in our

analysis are only the different phases of the one indivisible conscious state.

But though consciousness can be neither defined nor deduced, its conditions may be studied. The general form under which consciousness exists is that of the antithesis of subject and object; that is, the object of which we are conscious must be distinguished from self as its subject, and objectified to self either as its state or act, or as a quality of external things. When this primal distinction is sharply made, we have a clear consciousness; when it is vaguely made, we have an indefinite consciousness; and when it is altogether lacking, we have nothing that can be called consciousness at all. For to be conscious, we must be conscious of something; and we are conscious of that something only as we distinguish it from self, and place it over against self as our object.

This point has been much disputed, but mostly on partisan grounds. It is plain that our personal experience can never justify the denial, as we can by no possibility have a conscious experience which is not known as our own. No more can any observation of others ever reveal the inner structure of their consciousness, as such structure is hidden to external observation. The question must be decided, then, on theoretical grounds.

Because of the exigencies of the sensational philosophy, the claim has been made that a purely sensitive consciousness is possible, which contains no reference to either subject or object, but is simply itself. These references come later as the result of associated experiences. Our experience is said to fall into two groups, one of vivid, and one of faint experiences. The former comes from the object; the latter, from the subject. But these two groups are only gradually formed and distinguished, through the coalescence of like experiences, and the separation of unlike. Up to this time there is neither subject nor object, but only

particular feelings. Out of these, association builds up the conception of both subject and object. The claim is untenable, for the following reasons.

Such units of conscious feeling could never constitute a unitary consciousness. If *a, b, c, d, e* represent the several conscious states, they fall entirely asunder so long as the conscious self is not added. The consciousness of *a* is not that of *b*. Moreover, the series being in time, it perishes as soon as it is born. In short, we have states of consciousness, but no consciousness of states; and a proper consciousness is possible, not as a series of states of consciousness, but only as a consciousness of states. But in order to the latter, there must be an abiding subject of the series, and one which discriminates itself from the series. Only as the states are discriminated from self as their subject, and are united in the various rational relations, does any intelligible consciousness arise. The truth in the sensationalists' claim is, that these acts of discrimination may be more or less definitely performed, and hence consciousness may be more or less distinct and comprehensive; but they are implicit in every act of consciousness. Where they are entirely lacking, there is nothing which can be called consciousness, but only a mechanical reflex activity.

Consciousness admits of various degrees, because the function on which it depends may be more or less definitely performed. The lowest range of consciousness of which anything is known is that which exists when dropping off to sleep, or that of objects which affect our senses when our attention is otherwise directed. In these cases consciousness approaches a vanishing point, and often reaches and passes it. The objects exist for us only as a vague objectivity without definite significance. They emerge from this state only by a voluntary or involuntary direction of our attention toward them. If now we choose

to call this state unconscious, and reserve the name of consciousness only for clear or distinct consciousness, we should say that very many mental states exist below consciousness. This has often been done, and the theory maintained that we may have manifold sensations and feelings without being conscious of them. But this is simply the extravagance of confounding a vague and imperfect consciousness with none; the truth being, that we have vague and unobtrusive sensations without directing our attention to them. This lower limit of consciousness does not admit of being definitely fixed.

Our attention may be directed to the different factors of consciousness, to the neglect of the others. Thus we may confine our attention to the object, or to the subject, or to the object in relation to the subject. This fact has given rise to the distinction of consciousness and self-consciousness, of perception and apperception. But this also is an extravagance. There is no consciousness, or perception, without some element of self-consciousness or apperception. When we perceive something, we at least know who it is that perceives; and when we lose ourselves in an object, we always know who it is that is lost. The antithesis of subject and object never vanishes, but one member is dwelt upon rather than the other. A great deal of what is called self-consciousness is simply a consideration of objects and aims in their relation to self. When we say that we not only know or feel, but we know that we know or feel, the truth is merely that we make the fact of knowing or feeling the object of our attention.

Attention is a condition of rational consciousness. When the sensibility is affected without fixing our attention, only a vague and indefinite consciousness results. But the significance of attention is double. Attention may mean simply the direction of our activity toward a given object. In this sense it is a form of self-determination, and is a

condition of mental action. But the significance of attention for consciousness consists quite as much in the kind of activity as in its direction. Attention as a simple staring at our objects leads to nothing. To reach a clear rational consciousness, we must establish relations among our objects and assimilate them to one another; and thus our attention leads to new knowledge, or to a clearer perception or comprehension of our objects. We can fix our attention continuously upon an object only on condition that we continuously find something new in it, either by making new distinctions or by establishing new relations. When this is not the case, we become mentally paralyzed by the fixed stare, and thought comes to a stand-still. Attention, then, runs right into the rational, or relating, activity of the mind; and this it is which has such high significance for consciousness.

Consciousness depends on the distinction of subject and object; but this distinction alone would give only a vague objectivity, without any rational content. Consciousness emerges from this confused state only as the mind establishes rational relations among its objects. To see the significance of this relating activity for consciousness, we need only drop out the rational relations from our objects. With the vanishing of temporal distinctions all our objects flow together into a confused present. With the vanishing of space relations there is nothing but an indistinguishable objectivity left. With the conception of causation all dependence vanishes; and such consciousness as might remain would be as meaningless as a language composed of interjections. A rational consciousness is possible only through the relating activity of the mind, whereby it constitutes its objects in rational relations. If, then, we should allow the possibility of a simple sensitive consciousness as a consciousness of the first order, we should have to affirm a higher rational consciousness as a consciousness of the

second order. The fact, however, is rather that consciousness admits of varying degrees of clearness according as the functions upon which it depends are more or less definitely performed.

It is the range of this relating activity which determines the limits of consciousness. We can grasp a plurality of objects only on condition of being allowed to relate them, and thus to unite them. And here the categories which are norms of distinction are also principles of unification. Things distinguished in time, space, number, etc., are at the same time united by those relations. Number in particular is the great unifier, whereby a plurality is made amenable to our intellect. The idle question has often been raised whether we can be conscious of more than one thing at a time. It is plain that, if we could not be, a rational life would be impossible. No relation can be established with only one object, and without relations there is no thought. Of course the question vanishes if time itself, instead of being an independent duration in which thought occurs, is really only the form of our experience.

The claim that consciousness depends on the antithesis of subject and object has been variously misunderstood. In particular, it has been taken to mean that the subject and object are ontologically distinct. Hence it has been argued that idealism is certainly false, as that doctrine denies the object. Hamilton especially argued that consciousness embraces both subject and object, and hence that both are given as equally real. But this claim confounds a mental function with an ontological distinction. The object of consciousness is never the outer world, for consciousness extends only to our own states and acts. It is always and only our representations of which we are conscious in dealing with the outer world. These may represent an outer world; but in any case our conscious-

ness extends only to our thought of that world. We have the same form of objectivity in dreams, where there is no thought of an ontological otherness; and yet the object in waking perception is not projected outward with more self-evidence than obtains in many dreams. The same error has been used to prove that the Infinite cannot be conscious; since to be conscious there must be an independent object, while the Infinite as one and only can have no object beyond himself. On the same ground self-consciousness has been declared a contradiction; for if the self be the subject, it has no object; and if it be the object, it has no subject. All of this quibbling disappears upon remembering that the distinction of subject and object represents primarily the form under which consciousness takes place, and not any ontological separation between them.

It is a very general conviction that self-consciousness is a late development of the mental life, and many deductions thereof abound in the associational psychology. We are said to live a conscious mental life long before we live a self-conscious life; and thus self-consciousness is explained as a late result of experience. Even the intuitional psychologists differ on this point, some claiming that we have immediate consciousness of self, and others that the self is known only by inference. Materialists and many sensationists claim that the self is nothing but a name for the sum of mental states. These cluster together and thus constitute the self. In these claims we have some extravagance, some ambiguity, and considerable nonsense. We deal with the last first.

The reality of the self has already been established in Chapter I., and we refer only briefly to the subject here. Let *a*, *b*, *c*, *d*, *e*, etc. be the mental states whose sum is to constitute the idea of self. For whom does this sum exist? For *a*? or for *b*? If for *a*, or for any other member of the series, then that member is more than a mental state, for

it must be able to be conscious of itself and of all the others, and must be able to distinguish them from itself and from one another, and also to unite the others in its single thoughts of their sum. But if *a*, *b*, *c*, etc. are simply mental states, they never become a sum, or even a series. Each remains an isolated unit of consciousness, and a rational consciousness never begins. The attempt to construe the self as merely a cluster of mental states breaks down before the fact that even a cluster cannot be known as a cluster except by some unit which comprehends them all.

Two elements are to be distinguished in self-consciousness, (1.) our thought, or conception, of ourselves, and (2.) our experience of our thoughts, etc. as our own. The former element is developed and variable; the latter is original and constant. The conceptions we form of ourselves are manifestly acquired like our conceptions of any other object; and this conception, like all others, may be more or less accurate.

With children, and with many besides, the body is identified with the self. Our body enters into all our experiences, either as affected or at least as present. In particular, it is the seat of a great mass of feelings of pain and pleasure, and, with those who have no higher feelings, the body will not fail to be viewed as the self. But the facts of death and of the religious nature soon led the race to a different conception, according to which the soul is something distinct from the body and able to live apart from it; and yet even here the attempt to picture this view always results in conceiving a physical form with the physical attributes of the actual body, though in a somewhat sublimated form. And after all the utterances of the philosophers, nothing is more common than for us to wonder what we are, whether a passing bubble on the ocean of existence or an abiding essence. These facts

show clearly that our conception of self is a variable one, and that it is least of all an original and constant datum of consciousness. Even yet it is not complete, as appears from the oft-repeated question, What are we? It not only does not yet appear what we shall be; it does not even appear what we are. If complete self-knowledge were given in immediate consciousness, this could not be the case. In this sense, then, the idea and knowledge of self are developed, and the history of the idea can be given.

But this conceptual self-knowledge is by no means identical with self-consciousness; indeed, we can conceive a mind to have the fullest conceptual knowledge of itself, and yet have no proper self-consciousness at all. It might have all the categories of the reason, and might know that every mental state must have a subject and that every thought must have a thinker, and still have no self-consciousness. Nor should we get on if we endowed this being with perfect knowledge of all existence. In that case it would discover a great many minds, and itself among the rest. It would also discover one of these minds to be the same mind which was thinking of all these other minds; but its knowledge would carry it no further. Its conception of itself would be just as objective and indifferent as its conception of all others; and there would be nothing in its experience to explain that peculiar intimacy and vividness of self-consciousness which makes each mind for itself, not merely a specimen of a class, but a special case which puts all other things and persons into absolute antithesis to itself. For every individual, the world falls into two members, himself and all other things and persons; and this antithesis admits of no inversion. We may think of others with thoughts and experiences like our own; but these conceptions lack entirely the vividness and reality of our experience of ourselves. The personality of others we merely conceive; our own personality we

experience. Our mind is not merely a mind; it is *our* mind. The simple categories of the intellect would affirm only *a* mind; we pass from *a* mind to *our* mind, because we do not merely grasp ourselves in conception, but also realize ourselves in immediate experience. It is this self-experience which attends all our mental states which interprets to us what is meant by *our*; and if it were lacking there would be no way of telling what is meant thereby. This self-experience is the original and irreducible factor of self-consciousness. It is in the life of feeling, desire, emotion, interest, that selfhood acquires any vividness and reality.

No deduction of this self-experience is possible. It is something unique, and can be understood only in terms of itself. Some materialists have urged that self-consciousness is explained by the movement of the brain molecules in paths which return upon themselves. The source of this folly is evident. Self-consciousness may be called a reflection of consciousness upon itself, and hence a movement returning upon itself might, in extremely gross minds, pass as an explanation of self-consciousness. Scarcely better are the various philosophical accounts which teach that self-consciousness arises only through an outgoing activity of the self, which, meeting the non-self, is reflected back into the self again. This is entirely unintelligible except as a highly figurative way of describing self-consciousness, and, if allowed as a fact, we should not have self-consciousness, but simply an emitted and reflected activity. To call this self-consciousness is an abuse of language.

Equally unsuccessful are the attempts to deduce the idea from the interaction of other ideas. Many striking things are said of "conception masses," which represent the self, and which, by repelling or assimilating new experiences, produce all the phenomena of self-consciousness. Such utterances belong to the department of psychological my-

thology. The "conception masses," having by hypothesis no subject, could never attain to a rational consciousness of any sort. They but illustrate the too familiar fact that we easily mistake abstract fictions for things. Equally hopeless is the claim that we reach self-consciousness by inferences from our mental states. The difficulty is, that such inference must be either from *our* mental states, or from mental states not known to be ours. In the former case, there would be no need of inference, and in the latter case we should come to a knowledge only of *a* self and not of *my* self. Hence we hold that self-consciousness rests on an immediate experience of self. This self-experience is the raw material out of which our developed conceptions of self are wrought. Experience does not intensify it, but only furnishes us with clearer ideas whereby to interpret it. The small child, who has not the least idea of self and not-self as formal conceptions, has yet the liveliest experience of itself in its feelings of pain and pleasure. We conclude, then, that all consciousness of which anything can be said has in it this element of self-experience, and that this element is primal and undeducible. The self does not stand behind experience as its mysterious noumenal ground to be reached only by inference, but reveals itself as present in experience. We have neither an abstract consciousness of self, nor only a consciousness of mental states, but a consciousness of self as having states.

This distinction of the experience of self from the conception of self enables us to adjust a dispute of long standing in psychology. The question is raised whether we have direct consciousness of the ego, and both sides are taken. Against the affirmative, it is urged that our knowledge of the ego is purely a matter of inference from states of consciousness. What the ego is, is known by studying its phenomena, just as the nature of hydrogen is learned by studying its phenomena. It is further urged, that we

are not conscious that the ego is a substance at all; as is shown by the possibility of materialism. This seems to make out a case for the negative; but, on the other hand, it is urged that no consciousness exists without an implicit reference to self as its subject. We are not conscious of thoughts and feelings, but of our thoughts and feelings. It is, then, nothing strange that we succeed in deducing self-consciousness when we start with it. This seems to make out a case for the affirmative. That these two views do not apply to the same factor of self-consciousness is apparent. The first claim is valid for our conception of the nature of self; the second is valid for our immediate experience of our thoughts and feelings as our own.

Self-consciousness may remain on the lowest level of self-experience; and it may advance from this to a distinct conception of self, and to an affirmation of self as the controlling subject of experience. Only in that case would self-consciousness be perfect. This state is reached only as the mind comes into reflective self-possession and self-control. In childhood there is an abundance of self-experience, but no reflective self-knowledge. The idea of self does not appear as a central idea in the mental life, and the mind is absorbed in its objects, or in its experiences of pleasure or pain. Even in our mature human life, self-consciousness often remains on the level of self-experience, without any distinct reflection upon self as the subject of our experience, and even without much reflection upon the nature of our activity in general. In this state of mind we often do and say things without any true sense of their significance; and afterwards, upon reflection, we are hardly able to conceive the deed or word as our own. In the delirium of passion this is very common; and the man is said to forget himself, or to be beside himself, etc. If now we should decide to call only developed and perfect self-consciousness self-consciousness, it would be true that

self-consciousness is a late development of the mental life, and that it may even fail altogether. But this would be the extravagance already referred to. The facts show simply, not that either element of subject or object may be absent from consciousness, but that the mind may direct its attention to either to the neglect of the other, or rather that consciousness may be focused upon either of its elements, according to our interest at the time. It is possible that, in the case of the lower animals, self-consciousness may remain permanently on the level of simple self-experience without further rationalization of that experience.

The experience of self is primal. The conception of self is secondary. The latter is reached like all other conceptions, and may be more or less adequate. Here is the place for the fine psychological observation, that children are slow in learning the use of the personal pronoun of the first person; for though not clearly relevant, it is always charming. The bringing out of the idea of self into clear consciousness as the centre of the mental life is, indeed, a slow process. In childhood, this conception seems lacking. There is self-feeling or self-experience; but the self has not been clearly set over against its objects and activities as their subject and controlling source. When this is done, we have the consciousness of freedom, a fact which explains the claim often made, that to be self-conscious is to be free. In such developed self-consciousness the soul is aware of its aims and ideals, and directs its activities accordingly.

Developed self-consciousness is subject to various disturbances. In the delirium of fever or of passion, the mental states may break from control, and hinder the function upon which clear self-consciousness depends. Again, the feeling connected with mental states varies, and especially our interest in objects. In cases of mental disease, disturbances of feeling sometimes occur, which make the

person seem strange to himself. Profound apathy, also, can arise, which causes everything to seem foreign to the mind, as a paralyzed limb to the body. This does not imply an absolute ignorance of self as the subject of the experience, but only a profound indifference, in which all self-interest has vanished. And as it is the life of feeling which gives any vividness to selfhood, disturbance of the former must affect the latter.

Herewith we close our study of the factors of the mental life. The aim has not been to exhibit these factors in combination, but to show the factors themselves. Concerning them a double error is possible. On the one hand, we have an attempt to reduce these factors to some common form; and on the other, we have a tendency to regard them as distinct entities. The former appears in the sensationalists' deductions, and the latter in the traditional doctrine of the faculties. Both errors are to be guarded against. The transformations of sensationalism are purely verbal; and we have to assume a complex mental nature to account for the complex mental life. But we are not to suppose that this complex nature is made out of a bundle of independent faculties. The faculties are always and only abstractions from the many-sided mental life. This life is the reality. Here and here only do the reason, the will, the intellect, the understanding, the sensibility, have their existence; and all alike represent only phases of this basal life.

PART II.

THE FACTORS IN COMBINATION.

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CHAPTER I.

PERCEPTION.

WE have studied thus far the elementary factors and processes of the mental life without any reference to their products and combinations. These we have now to consider; and first we deal with perception. This has often been regarded as a simple and unanalyzable form of mental activity; whereas it is really a process into which all forms of mental activity enter to a greater or less degree. Will enters in the form of attention. Thought contributes its categories, and the sensibility furnishes the raw material. Even reproduction plays an important part, as we shall see. Essentially, perception is a process of rationalizing sensation, or an application of the categories to the raw material of sensation. In this way the mind reaches the world of things. This is the thesis to be established.

When two persons converse, no thoughts leave the mind of the one and enter bodily into the mind of the other. The nervous action and vibrating waves of air which intervene contain no thought. How, then, is an exchange of thought possible?

All thought of transmission except in a figurative sense is impossible. The fact is this. By an entirely mysterious world-order the speaker is enabled to produce a series of sensations in the hearer which are totally unlike thought,

but which by virtue of the same mysterious world-order act as a series of incitements upon the hearer, so that he constructs in his own consciousness the corresponding thought. The act of the speaker is in availing himself of the proper incitements, that of the hearer is primarily the reaction of the soul against the incitement. Hence, to perceive another's thought we must construct it in ourselves; and to inform another of our thought is not to pass something over to him, but to incite him to a form of mental action like our own. All communication of finite minds is of this sort. Instruction and education of every kind consist, not in pouring ready-made knowledge into the mind, but in directing its activity so that it shall develop knowledge within itself. The wisest teacher can do no more than avail himself of the system of incitements which the world-order provides, and then trust to the student's mind to react against incitement with growing thought and insight. Thoughts are not things which can be handed along ready made, they are rather mental functions; the only way in which a thought can be put into a mind is to stimulate it to perform the corresponding function.

What is thus true of the perception of another's thought is equally true of our perception of the outer world in general. To perceive the universe we must construct it in thought; and our knowledge of the universe is but an unfolding of the mind's inner nature, a reaction of the mind against external action. The mere existence of a thing is no ground for our perception of it on any theory; it must in some way act upon us. If we might personify the universe, and attribute to it a desire to pass into human knowledge or to appear in the human mind, we should say that it must proceed as a human teacher does. The latter avails himself of a system of excitations whereby he incites the mind of the student to unfold itself and develop knowledge within itself. All the while he is putting nothing in, but

is leading the mind out into possession of itself. In the same way must the universe proceed. It can put nothing into the mind except by inciting the mind to special forms of activity, which in turn are only expressions of the mind's own nature. The grounds of this conclusion lie in the notion of interaction and in the physiological facts concerning perception. We consider them in order.

For us the soul is a real agent, and all perception rests upon an interaction between the soul and the world of things. But in all interaction, when one thing acts upon another it contributes nothing, but merely furnishes the conditions of the other's action or manifestation. Least of all can the cause of an effect be laid in only one of the things. Thus, a ray of light falls upon ice, upon a mixture of hydrogen and chlorine, and upon the eye. In the first case melting results; in the second, explosion; and in the third, a sensation. Here the antecedent is the same in all the cases; the difference of the consequents must be attributed to the nature of the things acted upon; and the effect in each case can be viewed only as a manifestation of the peculiar nature of those things, and not as something carried into them. What is thus true of all interaction is true of that between the soul and the world of things. The reaction of the soul in such cases represents nothing poured into it from without, but is rather an expression of what the soul is. But perception depends upon such an interaction, and hence we cannot find the sufficient ground of our knowledge in the object, as is often done, but must rather hold that the resulting knowledge is an expression of the nature of the mind itself. The external action, here as elsewhere, only furnishes the incitement which leads to a peculiar reaction on the part of the soul in which the soul manifests itself.

The physiological facts connected with perception lead to the same conclusion. Things have often been spoken of

as stamping, impressing, photographing, themselves upon the mind ; and these figures of speech have been taken for explanations. But to see their purely verbal character we need only ask (1.) where these stamps, etc. are ; (2.) where the extended mind is that receives them ; and (3.) how these pictures *on* the mind become thoughts *in* the mind. If we should allow the grotesque fancy that things really stamp themselves upon the mind as an extended substance, the perceptive act would be as far from being explained as ever. We should have outlines on the mind, but no thoughts in the mind ; these would be reached only as the mind, by an inner act, changed the stamp, or image, into conception. The strength of such figures of speech lies in the fact that we regard the knowing mind as something objective to ourselves. Accordingly, when we figure the mind as a tablet with pictures on it, we also think of ourselves as looking at the picture ; and then we mistake our imagined perception of the picture for its perception by the impressed mind. But all these whims disappear when we remember the conditions of perception. On the most realistic theory, nervous action is the medium of all our knowledge of the outer world ; and this contains neither thoughts nor pictures. It is totally unlike the world of things, on the one hand, and the world of thoughts, on the other. No reflection upon it will claw out of it either the external thing or the internal thought. A printed page contains no thoughts ; these arise only as some mind appears which can read the page back into its significance. Likewise nervous action contains no knowledge ; this can arise only as this action is upon some mind which can read back the nervous sign into its objective significance. But to do this the mind must have the principle of interpretation in itself. It has no standard or pattern by which to go, for the nervous action is all the outer world contributes, and this the mind has to read back into a world of things. But in so

doing, it is only reacting against external stimulus and unfolding its own nature. Our world vision is primarily a product of the mind under external incitement. Whether it truly represents the outer fact is a question for separate discussion; but in any case our knowledge, such as it is, is gained in this way. It is not a passive importation into the mind, but is developed by the mind within itself.

Psychologists of the common-sense school have sought to evade this conclusion by speaking of an immediate knowledge, or a direct gaze on reality. Supposing the fact to exist, the question still remains, How is this immediate knowledge possible? The things may be there just as we conceive them; but their existence does not explain our perception. Things, too, do not throw off images or phantoms of themselves, as the scholastics thought, which enter into the mind and mediate knowledge. The impressions on the retina or on the surface of the body, likewise, do not explain the fact. The only answer is that which we have given. Things act upon the mind, and the mind reacts by constructing in itself the thought of an object, and affirming the object as a reality; and this constitutes our knowledge of the thing. Mediate knowledge in sense perception is that gained by inference, as in the acquired perceptions; and immediate knowledge can only mean such knowledge as results directly from the interaction of the mind with the object. But this implies no passive reception of ready-made knowledge; but only a spontaneous development of knowledge by the mind under the proper conditions. Indeed, the psychologists of this school have formed their theory less from a study of the facts than from a predetermination to avoid anything which might lend aid and comfort to idealism. This is especially the case with Hamilton's theory of immediate perception. In his desire to have no go-betweens in perception, he was forced to maintain that every sensation is really felt where it seems

to be, and hence that the mind fills out the entire body. Likewise he had to affirm that the object in vision is not the thing, but the rays of light, and even the object itself had, at last, to be brought bodily into consciousness. Thus he reached the absurdity that the true object in perception is something of which we are totally unconscious.

This, then, is the way in which our world vision is built up. Sensations are produced in us, and associate according to certain laws. The mind next reacts upon these by classifying and distinguishing them, and finally objectifies them under the forms of space and time, of cause and effect, and of substance and attribute. Our objectified representations constitute for us the external world. This does not forbid that the world may be as real as common sense assumes; it only points out that to perceive the outer world we must think it, or construct it in thought. The mind can never grasp the object other than through the conception; and the object exists for the mind only through the conception. Hence our knowledge of the outer world arises only as we form certain conceptions and objectify their contents in independent existence.

Concerning the reality of the knowledge thus gained, we here say nothing. We are considering perception as a psychological process, and leave the inquiry into the validity of its results to the theory of knowledge. We point out, however, that if our objective knowledge is valid, we must assume that the laws of thought are parallel to those of things. Since the thing is known only through our conception, and since in forming this conception the mind follows strictly its own laws, it follows that the validity of the conception implies that the laws of thought and those of being are parallel. We must further assume that there is a fixed relation between the antecedents of sensation and the nature of things, on the one hand, and between those antecedents and the thought activity on the other. That

is, if knowledge be of the fact, then the activity which produces sensations must be adjusted to the fact, and must arouse the mind to an activity which shall reproduce the fact in thought. Without this assumption of an exact adjustment of heterogeneous elements, there can be no trust in perception.

But how in that case can error occur? Manifestly we cannot place any trust in perception without assuming a fixed order of interaction between the subject and object; but if there be such an order, how can error arise? This question can be answered only by assuming that the fixed order extends only to the elements of the interaction; and that these elements may be united either by association or by arbitrariness in ways which are foreign to the truth of things.

Thus far we have only sought to determine our general conception of the perceptive process, without describing it in detail. It is conceivable that all perception should be immediate, so that the rational interpretation of our sensations should be instantaneous, and independent of inference and experience. The relation between the object and the mind might be such that we should at once perceive it as it is and where it is. But this is not the case. We learn to perceive. The interpretation of our sense experience into a world of things of fixed nature and in definite relations is a gradual process; and very much of it rests upon an automatic interpretation of sense signs which we have learned. A history, then, of the perceptive process is conceivably possible; but unfortunately it is hard to write. We learn to perceive long before we reflect upon the process; and by the time reflection begins, the process has become so familiar that its steps are no longer visible. The factors which enter into it can be discovered by analysis of the product; but the genetic stages are not manifest. The details of how we come to refer our sensa-

tions to definite objects in space, either as their qualities or as caused by them, must, then, be matters mainly of surmise and guesswork. In our mature life all our sensational experiences are immediately referred to things in time and space, and this fact leads us to fancy that it always has been so, and it also makes it difficult to assign to the several senses their significance for the process.

The perception of things and that of space relations grow together. Things first become things for the mind when individuated in space; and, on the other hand, as soon as things are distinguished in space relations they appear as things. We have already pointed out that not all sensations are equally efficient in arousing the mind to a spatial projection of its objects; but it is not easy to decide the efficiency of the several senses. Tastes, sounds, and odors, in themselves, locate their objects very faintly, if at all. There is little difficulty in abstracting from space relations in their case, and confining ourselves to their purely qualitative significance. If they have any power in themselves to cause a localization, it seems to be only a reference to the part of the organism which is affected.

Sight, touch, and the muscular sensations attending movement, are much more effective; though it is impossible to tell to what extent they affect one another. What we need to know is whether sight alone, or touch alone, or muscular sensations alone, would give us any developed conception of space. It seems that a staring eye which could not move would give us little or no knowledge of space relations; and the other senses without the aid of the eye would never enable us to grasp our objects in a common space with anything like the clearness of actual experience. Indeed, we find it impossible to grasp the space relations of a manifold in a common intuition, unless it be presented in vision. We lose the beginning before we come to the end. Hence it is often claimed that with the blind an involved set of

temporal conceptions takes the place of space relations; but this claim is disproved by the existence of blind geometricians. They must possess the elements of the space intuition; but the total image of space is probably very imperfect.

In actual experience, our various external senses work together, and may be aided by changes in the brain itself due to our various movements. One general assumption, however, must be made; namely, that sensations cannot be interpreted into any and every space form, but that there is a fixed relation between a given form of sensation and its spatial interpretation. This is simply an application of the notion of law or uniformity to the process, without which there would be no fixed connection between any object and our perception of it. What at one time appears as round might at another appear as square, etc.

Various attempts have been made to adjust the significance of the several senses for the spatial localization of our objects, but with no very great success. The common-sense philosophers take the fact for granted, without asking how. A wide-spread view is that the elements of space are first learned from touch and movement, and that these are extended and completed by connection with the eye. Others, again, seek to vindicate an original localizing power for the eye itself. Still others think that all our senses may have such a power in some degree. For the perception of the extension of our body a doctrine of local signs has been proposed, according to which every sensation from any part has a local coloring, whereby it is distinguished from all the rest, and may be located. But the doctrine is plainly of no use until the perception of extension has taken place. Until then the local signs are simply qualitatively distinct sensations, without any hint of their spatial origin. We are not anxious to decide among these various theories. The fact is, that the localization did not

take place instantaneously with the first sense experience, and that it takes place with much greater rapidity and accuracy through some of the senses than through others. But it could not take place at all, and our space experience in general would be impossible, if certain forms of sensation were not attended with fixed elements of spatial construction.

The strict solution of this question of localizing power in the different senses is not to be expected. Before observation begins, the localization has taken place; and either from association or from original power the objects of all the senses have received a local reference. Thereafter it is impossible to isolate any sense so as to get its unalloyed product. Nor can much weight be laid upon the pathological observations upon persons who were born blind and received their sight in later years. In such cases it would be hard to prove that the eye itself is in an optically perfect state; indeed, the probability would be for the negative. But admitting the fact, the only conclusion would be that the eye is not able at once and finally to locate its objects apart from all previous experience. It would by no means prove that the eye, when exposed to such changes as motion would produce, would not finally excite the mind to a developed and complete image of objects in their space relations. If we could have a human being made to order, and were permitted to furnish him successively with the several senses, we should get on with the problem; but this can hardly be called a probable contingency.

Perception is not complete until its objects are assimilated and classified. If the mind simply projected its objects under the general categories without any further classification, thought would still be in its rudimentary form. We should have objects in general, but nothing defined and specific. Our objects pass from this vague generality to definite content only through classification.

We cognize the thing by recognizing it, that is, by referring it to a known class. If an object is presented to us, our first effort is to tell what it is; and if we can refer it to some class, we feel that our knowledge is increased. When this cannot be done, the thing remains for us an indefinite object, under some one of the categories. To see the significance of this classificatory element, we need only remember that all the terms of a language, except the interjections, are general terms. Hence, to name anything, or to apply any term whatever to it, is an act of classification. The completed perceptive process, then, involves classification as one of its essential factors.

The total result of the perceptive process is, that the mind forms a conception of a manifold of objects in space relations, and having various sense qualities; and thereafter the object of perception is not the thing as it appears, but the thing as it exists for thought. Thenceforth there is a distinction between the appearance and the thing signified. The appearance of any object varies with our distance from it, and changes constantly as we approach or leave it. The mind, however, passes spontaneously to the conception of the thing as existing in a self-identity in space, and never dreams of confounding the changing appearance with the constant thing. From this time on, the appearance is connected with the thing as its symbol, and the mind passes, not by inference, but by association, from the symbol to the thing. Thus in painting we seem to see the thing, and in speech we seem to hear the meaning; whereas the meaning in both cases is something added by the mind through an automatic connection of the sign with the thing signified. If we should allow the mind to add nothing, and should limit it strictly to what the senses give, we should have neither identity nor constancy in our objects, as the sense appearance is perpetually shifting.

The clearness with which our objects stand out before

the mind in perception varies with the distinctness of the sensations produced in us; and we learn by experience that this distinctness is itself a function of the size and distance of the objects. It is this general fact which gives rise to the so-called acquired perceptions. Perceptions of size and distance are not immediately given in sensation, but are reached, either automatically through association, or inferentially through judgment. Hence they are said to be acquired. The simple fact is, that we learn by experience to estimate the spatial significance of many forms of sensation.

At this point, also, emerges the possibility of sense illusions. The senses themselves, as giving us only affections of self, can never deceive us. Such affections are neither true nor false, but simple facts of consciousness. Delusion first becomes possible when we refer the affection to its causes, or when we seek to interpret its objective significance. We first find in experience a given sensation referred to a certain objective ground, and connected with others as possible. When this order is once established, any factor of it is sure to suggest all the rest. Hence, when any sensation which we have been accustomed to associate with a given thing is produced, we always perceive the thing which in our normal experience goes with that sensation. But the sensation may be produced by disease or imagination, without the customary external stimulus. In all such cases we have sense illusions, and seem to see something where there is nothing to see. Delusions of this kind are impossible until sense experience has acquired some consistency and fixedness; and, on the other hand, experience could never acquire any fixedness if cases of this kind were frequent. The more common cases of sense illusion are those connected with our perception of size and distance. In experience our perception of size and distance is connected with a peculiar quality of the visual appear-

ance, and hence whatever affects the latter affects the former.

It is impossible, however, entirely to absolve the senses; for though in the strict sense they do not deceive us, they are well adapted to deceive us. That is, the appearance is presented in such a way that illusion is almost unavoidable. If we accept the current doctrine of the subjectivity of sense qualities, our entire sense experience is a continuous and gigantic illusion. Minor illusions are found in the distortions of perspective, the vision of complementary colors, etc. The general untrustworthiness of the senses, within certain limits, is an axiom in physics. Here the first aim is to reach some objective standard which shall free us from the uncertainty of subjective estimates.

In speaking of association, we said that there was a time when the representations of the different senses had no connection. There is nothing in the vision of color to suggest any of the sensations of touch, odor, etc. Their actual union is brought about by experience, and its method is highly obscure. It is conceivable that the percepts of the different senses should never have been united into a common object with various sense qualities; and it is not easy to tell how the composition is effected. But after it has been brought about, and after the eye has been taught, the eye becomes the chief organ of knowledge. Thus the object of vision becomes, not what the eye sees, but what the mind sees or the eye suggests. The eye can really see only different colors and outlines; but we pass so immediately from these to what they suggest, that we seem to see the thing signified. In actual perception, what the eye gives is as different from what the mind sees as it is in painting or drawing. This general fact, which was first brought out into clearness by Berkeley, in his "New Theory of Vision," helps us to explain many problems which otherwise would remain great puzzles.

The first of these is the upright perception of objects. It is well known that the rays of light must form an inverted picture on the retina, and hence it has been concluded that we ought to see all objects upside down. But as we do not thus see them, the fact of upright vision becomes a problem. It has been suggested, (1.) that the mind follows the rays outside of the eye beyond their crossing point, thus righting up the object, and (2.) that, because everything is inverted in the picture, we do not see anything so inverted. But apart from the difficulty that the mind knows nothing of rays of light, etc., all this rests on the assumption that the mind looks at the picture on the retina, which is a pure whim. There is in such notions so coarse an identification of the soul with the body, that it is strange, as Lotze has suggested, that no one has thought of turning the soul end for end, thus by a double inversion restoring the object to correct position. The fact is, that the object is not perceived by the eye at all; but, from our total experience of the several senses, the mind constructs an object in space with various properties and relations, and certain visual sensations come to stand as a sign of this object. This object is what the mind sees, not the visual percept. Berkeley himself contended that the tactual percept is the real object in perception, and that the visual sensation is only the sign of the same. The truth is, that the mental object is neither the visual nor the tactual percept, but the conception which the mind has built out of its past experience, and of which either may serve as the sign.

A second series of problems concerns our estimate of distance from vision. Here, too, the geometers appeared with the doctrine of visual angles formed by rays of light, and thought thus to explain the problem. But the same difficulty appears. The mind knows nothing directly of rays of light and visual angles; and it is absurd to suppose

the mind to infer distance from data of which it knows nothing. But this also admits of easy explanation. In common experience, dimness or confusion of visual sensations represents distance. We learn this by experience alone; but when learned, such dimness becomes a sign and measure of distance. We find, the size of the object being fixed, that clearness of the visual perception varies directly with the distance; and we further find, the distance being fixed, that the clearness varies with the size of the object. Hence, the same object often looks nearer, or larger, at one time than another. This is especially the case with the moon, and the fact was long a standing puzzle with the geometers. The reason is, that the moon, near the horizon, owing to the denser medium, seems dimmer than when overhead, and hence seems to be farther away, and hence seems bigger. In this case the effect of association is such as apparently to modify the visual perception. In some cases, association even produces outright the visual perception; for example, in speaking or reading, missing words or sounds are often supplied without any sense of their absence. That is, they are apparently heard or seen, because we know from experience what to expect.

Because of the constructive activity in perception, many have called it a process of inference or judgment. But it is plainly not a process of conscious inference, and so they have called it unconscious inference. The soul unconsciously infers from its sense data the existence of those objects which correspond to them in its normal experience. It is plain that there might be an inferential process based on sensations, but it is equally plain that, in general, there is none. Unconscious inference is a phrase in which the adjective devours the noun, and the noun annihilates the adjective. Nor do we need any such contradictory notions. The primal activity in perception comes under the head of interaction, according to a law fixed in the nature of the

interacting agents; and the facts with which we have just been dealing come under the well-known laws of association or suggestion. There is simply an automatic passage from sensations to conceptions which have been connected with them in past experience.

The objective perception may be the affection of the particular sense, and it may be what the mind perceives through that affection. In general, it is the latter. The object is not what the eye sees, but what the mind sees. This object, however, is presented to the mind by its reproductive activity. Just as the meaning of spoken words is not heard by the ear, but by the mind, and just as this meaning is evoked by the spoken word only by the laws of association, so the object before the mind is not perceived by any or all the senses, but by the mind only, and so also this object is brought before the mind upon occasion of the sense experience only by the laws of association. It follows, that perception is no simple process, but a highly complex one, in which the representative faculties are more active than the presentative. In any developed mental life, the past is more active than the present, even in our apparently immediate perceptions. The significance of classification has been already referred to.

In leaving this subject, reference may be made to a set of cases in which the constructive action of the mind in perception is very apparent. These are the cases of the deaf and dumb. Here the normal incitements to mental action are lacking; but others have been devised, whereby the mind is put in possession of itself and of the outer world. The most notable case is that of Laura Bridgman. With the blind, also, touch almost takes on the character of a new sense through the growing fineness of its discriminations. In all of these cases the mind remedies the defects of its physical instrument by adopting new systems of signs, or by improving the imperfect ones in its possession.

CHAPTER II.

THE FORMS OF REPRODUCTION.

IN a previous chapter, we have studied the mechanism of reproduction, but not its special forms and its significance for knowledge. It has been the custom in English works on psychology to distinguish presentative from representative knowledge. In the former, the object is directly presented to us, as in perception. In the latter, the object is recalled in memory, or created in fancy or imagination. In this view, moreover, presentation is made to cover the entire process of perception, so that representation has no part in it. Representation, on the other hand, is recognized only where the senses are inactive, as in memory or imagination.

It is plain from the previous chapter that we cannot accept this view. We have seen perception to be a complex process, involving both presentation and representation. Indeed, we have seen that the reproduced elements of knowledge are far more prominent even in an act of perception than the elements directly given in the sensation. In all mature perception the mental object is not given in the sense, but is suggested by it through the force of association. So in the use of spoken or written language; the ear hears no meaning, and the eye sees none. It is the principle of association which connects the two. In spoken language this fact often hides from us the imperfections of utterance; we know what to expect, and we hear accordingly. In written language the same thing appears. Unless we distinctly concentrate our attention upon the page, we fail to notice the errors of print or spell-

ing, etc.; because, having a conception of what the sentence should be, we seem often to see the very corrections which we unconsciously make. Another illustration of the same fact is the familiar experience of seeing words on the page which are not there. In this case some letter or letters catch our eye; and the mind fills out the allied word, and projects it so vividly upon the page that we are sure we see it until we look for it, and then it disappears. Thus we see that the presentative and representative processes go on together, and both alike enter into all completed acts of knowledge.

But while all mature and completed perception involves representative activity, there are many forms of representation which involve no present perception. Such are memory, revery, imagination, etc.; and these constitute a special phase of mental action. The mind is able to present to itself past, or absent, or non-existent objects and events; and this is representation. This includes imagination and fancy, because all the elements with which they deal have been given in experience. We can produce new combinations in imagination, but nothing more. By no effort can we tell what a new sense would be; and all our dreams of another life consist in assimilating it to this.

Past events may be reproduced as they were, and may be temporally located in our past experience. This form of reproduction we call memory or recollection. When the event is located in the future, we have expectation. Again, elements of experience may be reproduced without any regard to their original order, and without any reference to our personal experience. When this activity is automatic and aimless, it may be called fantasy. Finally, elements of experience may be purposely combined into new forms not hitherto experienced; or the past and absent may be called up, not for memory, but for contemplation.

This form of reproduction may be called imagination. In fact, however, there is no consistent terminology for the several phases of the representative activity. Memory, recollection, reminiscence, fancy, fantasy, imagination, creative imagination, are examples. In memory the element of recognition and temporal location is prominent. In fantasy both of these elements are lacking; and the activity is automatic, resulting often in a straggling series of incoherent, and often grotesque images. In imagination the will controls and directs the reproductive activity with reference to an end. Fantasy passes into imagination by an infusion of directing and rational volition, and imagination sinks into fantasy by its withdrawal. Memory also sinks into fantasy or passes into imagination as the element of recognition and temporal location in past experience vanishes. In actual experience, it is impossible to draw a fixed frontier between these forms. Generally some element of each is to be found in all.

Perfect recollection would involve the reproduction of the content of a past experience with all its elements and relations complete. This is seldom possible, except when the experience is near and simple. An experience involves both objective and subjective relations. By the former, we mean those relations which exist among the elements of the experience considered in itself as a mental state. By the latter, we mean the relation of the experience as a whole to self and our total experience. Both of these relations are liable to dislocation or displacement. Memory never gives all the elements of experience, and seldom gives them in their exact relations to one another. The position of an experience in our total experience, also, is very often mistaken. When the fact is at a distance, the temporal order is often inverted; and sometimes imagination takes the form of memory, and creates its objects outright. The local signs of events in the distant past are

generally very indistinct; and all that memory produces is the conviction that we have had such or such an experience. In this stage memory is especially liable to become creative, or at least to adopt the fictions of imagination for realities of past experience.

It is this fact, that complete recollection involves many elements, which accounts for the paradox that we often remember something without being able to recall it. We often remember an event apart from its relations, and especially apart from its local sign; and in that case we say that we remember it, but cannot place it. Often, too, we remember certain elements which assure us that certain other elements were present; and then we seem to remember elements out of memory. Often, again, we recall ourselves as having had experience under certain circumstances, without being able to fill up its outlines; or something reminds us of something, we cannot tell what.

Objects are bound together in experience in various relations, according to the degree of mental development. In the dawn of intelligence, the categories of space and time are much more prominent in the mental life than those of cause, order, purpose, etc. The latter categories, being more abstract, are reached at a later date. Memory follows the original experience in this respect. At first, it tends to reproduce all things indifferently in their original spatial and temporal order. Memory of this type is often remarkably tenacious. Long series of words combined into meaningless sentences have been reproduced with astonishing accuracy. But as the original experience involved no high mentality, so the memory of the same involves no high mentality. Indeed, this kind of memory is often associated with a low grade of intelligence; so much so, that a strong memory of this sort is often spoken of as a mark of mental weakness. This kind of memory is most prominent in childhood.

But as intellect develops, the tendency in the original experience is to pass over the insignificant and irrelevant, and to fix the attention only on the significant and important. Memory shows the same progress and selection. This has been thought to be another type of memory, and has been called the philosophic memory. But, in truth, the reproductive activity only follows the original order of interest and attention. The selective activity is first manifested in the original experience; and by such selection and the direction of interest, the mind prescribes the direction of reproduction.

The general law of reproduction shows that an experience will be the more certainly recalled the more ties of connection it has with our total experience. Thus, the intelligible is more easily recalled than the unintelligible. In the former case, we have both a sense experience and an intellectual one; in the latter, the intellectual element is lacking. In memory in general, the more the intellect is brought into play, the easier the memory. This is due to the double fact, (1.) that a new bond of connection is given, and (2.) the logical relation of the parts also constitutes a bond. No one can remember the premises and forget the conclusion. When the mental element is lacking, the matter is generally soon forgotten. "Crammed" examinations are examples. Things once understood, in their causes, connections, consequences, etc., are not easily forgotten. But this is not a particular kind of memory, but the natural result of the form of the original experience.

The energy and direction of memory in general further depend on the attention and interest which entered into the original experience. Other things being equal, the energy of memory will vary with the intensity of attention in the original experience; and other things being equal, it will vary also with the interest felt in that experience. That object is far more likely to be remembered which

awakens feeling, than one which is indifferent. Many objects are incessantly passing through consciousness; yet, as having no significance, attracting no attention, and awakening no interest, they are instantly forgotten. But while it is a general law that we remember only that to which we attend and in which we take interest, there are exceptions enough firmly to demonstrate the rule. Often some utterly meaningless or isolated fact will obtrude itself with the utmost persistency, while some important fact escapes us.

A common form of expressing the fact just dwelt upon is, that the revivability of experience depends upon the depth of the original impression, while the depth in turn depends upon attention and interest. The impression is said to be further deepened by repetition, and especially by frequency of impression. This form of speech arises from a desire to picture the process, and often leads to a false appearance of insight. We know simply that a definite form of mental activity may be reproduced; and that this possibility increases with a variety of circumstances, such as interest, attention, repetition, and especially frequency of repetition. On the other hand, a long cessation from a given form of activity makes its renewal increasingly difficult. Thus, one may practically forget his native language by long residence in foreign lands; yet even here one retains something at least in an increased facility for reacquiring it.

The possibility of reproduction varies with the nature of the experience. Sensations and emotions can only be very feebly recalled. In both cases we are greatly aided by language. In the case of sensations we are aided by a nascent affection of the organism. In the case of the emotions we either produce emotion by reproducing the circumstances, or we remember that we had an emotion without being able clearly to reproduce it except in name. It is only to these elements that the distinction of vivid and faint states applies

as the mark of difference between present and remembered experience. It is otherwise with the products of the understanding. Forms, thoughts, purposes, admit of being completely recovered without any loss of their original vividness.

Reproduction, whether as memory or as simple imagining power, varies very greatly with different persons, and often with different senses or different forms of experience of the same person. Many have a good memory of form, others of color, others of names, others of ideas, etc. These differences are largely matters of training, and to some extent result from original differences of constitution. These differences, however, are probably less to be sought in the reproductive faculty than in the original tastes and interests of the person, whereby the experience is first modified, and thus direction is given to reproduction. Galton has sought to treat the subject statistically, by issuing a series of questions to which answers were obtained. The results are given in his work, "Inquiries into Human Faculties." In particular, he claims that the power of visual representation differs greatly, and that this power is generally weak in men given to abstract thinking. But apart from the original difference which inclines one to abstract thought, the law of habit seems adequate to account for this fact.

Memory is commonly said to be the form of mental action which is most dependent on physical conditions, and the one in which mental failure first shows itself. This is probably much exaggerated. A failure of memory is easily discerned, and cannot be mistaken; while a failure of judgment by no means manifests itself with equal clearness and explicitness. Under the influence of the assumption, also, all failures of memory with the old are referred to old age, while the myriad cases of forgetfulness in all ages are overlooked. Finally, if there be a greater apparent failure of memory than of the judgment, it is possible

that this is due less to the failure of memory proper, than to a growing lack of interest in the subjects forgotten.

The actual recall of objects is not secured by their simple revivability; there must be, in addition, something in present experience to suggest them. This fact has been dwelt upon at length in treating of the mechanism of reproduction, and needs no further description here. The fact itself, however, serves to explain a great many forms of forgetfulness which often seem mysterious. A somnambulist awakes and recalls nothing of his dream; but when the dream recurs, he may take up the activity of the previous dream as if he had full recollection of it. Or a sick person may recover and forget all the events of his illness, and on occasion of a second attack recall them. Ordinary dreams, also, are generally promptly forgotten. Such facts seem due to the fact that these events have no associations with the normal daily life; and hence there is nothing in daily experience to suggest them. Hence, though revivable, they remain unrevived.

Since memory, like all mental functions, is physically conditioned, we should expect a general failure of memory with the failure of the organism. Such a fact would have in it nothing surprising. But there are various losses of memory which are much more difficult to manage. The progressive loss of memory in certain forms of aphasia admits of some psychological explanation; but other facts, such as the forgetting of a single language, or certain classes of subjects, remain utterly opaque on any theory.

In fantasy the reproductive activity is purely automatic. It has no reference to an actual past, on the one hand, nor to any mental aim, on the other. This activity is in inverse ratio to the self-conscious and rational activity of the soul. Hence it is at its highest when the will is relaxed, or when reason is overturned. Dreams and revery exhibit the purest forms of its action. Revery is commonly less gro-

tesque and impossible than dreams of the same sort, because there is more of rational direction in the former than in the latter, and because the corrective influence of the external world is more prominent.

There is no need to add much about the imagination. In its widest sense this is the power of representing absent or unreal objects and events to ourselves without any reference to our own past. It differs, then, from memory, in not producing the past as it was, in lacking the element of recognition, and in having a certain creative character. Various forms of imagination have been distinguished as the mathematical, the artistic, the poetic, the scientific, and the philosophical. These represent no distinctions of imagination however, but only differences of objects to which imagination is directed.

The significance of imagination for the higher uses of the intellect is obvious. It enables us in most cases to put our problems clearly before us, and thus furnishes the psychological conditions of thinking. A chief condition of penetrative thought is that the data of the problem be distinctly presented and steadily held before the mind. When this is impossible, thought becomes utterly uncertain. It is like the vision of a dizzy person, or the counting of one who cannot remember from one number to another what the last one was. But the ability thus sharply to present and retain our objects depends, in most cases, upon the imaging power; and it is here that differences of mental power are most manifest. The ability to reason profoundly depends in many cases quite as much upon the imagination as upon abstract logical penetration. In this sense imagination is a pronounced element of mental strength, and a necessary condition of greatness. Imagination as such is never a mark of weakness, though it may become a source of weakness when combined with a feeble judgment and a dreamy character. Then we have the day-dreamer, pleasing him-

self with fictitious objects, and losing sight of the world of reality. Indeed, it is not imagination which makes the day-dreamer, but the fanciful content of his imaginings.

Imagination also underlies all invention and discovery, and precedes all creative production. It is equally necessary in the moral realm. It underlies all sympathy and all formation of ideals. The ideal exists only in the imagination, and to sympathize with another we must put ourselves in his place. Indeed, our life is largely spent in a world of imagination. The actual present fact is of little interest. Memories, expectations, goods to be gained, evils to be shunned,—these constitute the staple of life, and are the prolific source of its joys and woes. Out of it are the issues of life and death.

In speaking of sensations, we pointed out that the mind has a certain power over them. By directing its attention in other directions, sights and sounds may fail to become objects of knowledge. With some persons this power of abstraction is very strong; and they can carry on a train of thought in the midst of confusion, such as the noise of a street, or the practising of a musical student. Without this power to some extent a rational mental life is impossible. The mind must be able to abstract itself from its sensations, and direct its attention in any desired direction. In speaking of perception, also, we found the power of self-direction necessary to explain error without cancelling truth. If the mind be throughout subject to its states, instead of controlling them, then no trust in reason is possible. The same need appears in studying reproduction. If the process were entirely removed from our control, the mind would be so stormed upon by the past that it would have no leisure to attend to the present. We occasionally meet with persons in whom the representative activity is abnormally prominent; and the result is always mental disorder. This is especially the case in insanity.

As the mind must be able to withdraw its attention from the manifold impulses which at every moment come pouring up from skin, eye, ear, muscles, and viscera, so it is equally necessary that it be able to withdraw its attention from the past and attend to the present. It must be able to control the direction of reproduction, so as to bring it into harmony with its present thoughts and plans. And this within certain limits the mind can do. It can form new associations and undo old ones, and, by directing its present activity in a definite direction, exclude all those functions which are incompatible with it. When this element of volitional and rational direction is wanting in memory, we have a chaotic reproduction of details without order or selection, and with perpetual and wearying digressions.

The tendency of experience is to give the mental nature a fixed set, which, when once established, can only with difficulty, if at all, be changed. Settled associations are established, and the spontaneities of thought and feeling flow in certain channels. Such a total mental cast represents the person's character, and it tends to fixedness or permanence.

CHAPTER III.

THE THOUGHT-PROCESS.

IN a previous chapter we have sought to show the existence of a specific thought-activity distinct from any function of the sensibility, and have dwelt upon some of its leading norms of procedure. We have now to consider it more in detail.

In the traditional doctrine thought is distinguished from perception, or simple apprehension, as a later process. In the former we know the concrete and particular; in the latter we reach the abstract and universal. Perceptive knowledge, then, is of individual cases only; thought knowledge is through universals. It is already plain that we differ from this view. For us there are two grand divisions of the purely intellectual life, (1.) the raw material of the sensibility, and (2.) the process whereby this material is worked over into the forms of the understanding. Thought includes this entire process, and perception is only the first stage of its activity. Indeed, we have seen that perception in its completed form is second, and not first.

The thought-process presents two stages, the spontaneous or automatic, and the reflective and volitional. In the former stage thought goes on by the psychological necessity of our mental constitution; in the latter, it becomes self-conscious and self-directing. In the former stage the laws and categories of thought are implicitly present as principles of our constitution; in the latter, they are explicit as formal rules of mental procedure.

This constitutional activity furnishes the basis of reflective thought. Whenever reflection begins, we find ourselves

already in possession of a mental world. We have just seen that the world of things exists for us only as we construct it in thought by bringing into sensation the categories of the intellect. Besides these, we find also a world of ideas which lay no claim to substantive existence, but which exist only through a highly complex mental activity. These mental products, whether common nouns, adjectives, or verbs, are all universals, and can only arise through an activity of classification. Moreover, we find this mental store fixed for us in the forms of language. This work is not the product of our volition, but the expression of our constitution. In it we see the mind operating, not with consciousness of its aims and governing principles, but according to the necessity of its nature.

The universal form of knowledge is the judgment. Knowledge cannot exist in isolated ideas, but only in the union of ideas into judgments. But judgments are impossible without the ideas united in them. I cannot say this is red or green, without having already some idea of red or green. A judgment of likeness or unlikeness is indeed possible between any two experiences whatever; but such judgments would never get us beyond the individual cases, and the mind would lose itself in hopeless confusion as soon as experience became at all complex. Articulate thought cannot go on until, in addition to the judgment of likeness, the common element is abstracted from the particular cases and from their individual temporal and spatial relations, and is set apart as a fixed unit of thought having only logical relations. When this is done, the complex experience is reduced to unity, and thus to a portable form. This unit of thought is a logical universal. It has no temporal or spatial relations, but exists as a general expression for all possible cases of its kind, and as a standard for their classification.

But since the universal in some form and in some degree

of development antedates reflective thought and is a necessity of all thinking, we must reckon the tendency to abstract, to generalize, to classify, as a part of our mental constitution. When many experiences have a common element, the mind tends by a certain psychological necessity to fix attention upon that element, to abstract it from its surroundings, to form it into a fixed unit of thought, and finally to use it as a standard of classification.

A double condition, then, must be fulfilled: (1.) the experiences themselves must admit of classification, and (2.) there must be in the soul an inherent tendency to pass from the particular to the universal. The first condition, while necessary to thought, is not necessary in thought. There is no contradiction in the notion that all our experiences should have been as incommensurable as the products of the several senses, say colors and sounds, or odors and pressures. In that case a thought life would have been impossible; for the raw material of experience would have been unadapted to our rational nature. The inner structure of the world of sensibility, whereby it lends itself to the operations of the understanding, is something which thought does not make, but finds.

The second condition has been generally repudiated by the associational school; and the claim has been made that by simple association like experiences must coalesce, and differentiate themselves from unlike, and thus produce general ideas. This claim overlooks the nature and function of the universal altogether. If the question were to determine the content of a given universal, something might be said for the claim that it is reached by averaging the particulars; but the universal is something very different from such an average or resultant. The universal is an abstraction from all particular cases, and is itself never given in specific experience. The universal is not only never given in reality, it is impossible in reality. The

particulars, on the other hand, do not coalesce to form the universal, but are ranged under the universal. We have also pointed out that association does not even provide for the recognition of likeness, upon which classification depends. The very utmost that association could do would be the presentation of like experiences. The recognition of this likeness, the abstraction of the common element, the making of it into a fixed unit of thought, and its use as a standard for further classification, — these are elements for which association makes no provision, even in the case of things which can be presented to the senses. This is so patent as to be palpable in the case of the majority of abstract and scientific conceptions, which, instead of coming of themselves, are reached only through great labor. This gathering of many objects under a single conception, which is not itself one of the objects, but the representative of all alike, is something added to any possible product of association. It can only be viewed as the outcome of a specific tendency in the mind to pass from the particular to the universal.

It is at this point that the possibility of language arises. Language deals with universals as soon as it gets clear of the interjectional stage; and interjections are not words, but noises. Even the particular thing must have some element of universality in it before it can become an object of articulate thought or speech. When the classifying tendency of the mind is lacking, there can be no rational utterance, for there would be nothing to utter. For the production of language several elements are needed. There must be (1.) a plurality of experiences, (2.) an abstraction of the common element of these experiences as a fixed unit of thought, (3.) the creation of a name for this common element, and (4.) an extension of this name to all the individuals of the group possessing this element.

In classification the mind grasps a multitude of cases in

a single conception, which stands for all alike. But objects themselves are often complex, and must be reduced to simplicity to prevent our losing ourselves in the mass of details. The mind guards against this by fixing its attention upon some striking feature to the neglect of the others. This serves to identify the thing; and the other elements are referred to only as occasion may require. It is this form of abstraction which is especially prominent in the formation of language. Things are named from their leading trait. Accordingly, when we get down to the roots of a language, we find some abstract conception expressive of a prominent quality of the thing in question. In lack of a verbal sign, this abstract quality itself serves as the symbol of the thing. In both the classifying and the symbolizing process, the mental aim is to master complexity by reducing it to simplicity and unity.

The logical necessity of the several elements just mentioned is plain, except in the case of the vocal sign. The others belong to thought itself; the latter is something of an arbitrary addition. Its teleological significance as a condition of rational society is apparent; but the inner necessity by which it is reached is not clearly seen. If it were not for the multiplicity of languages, one might be tempted to think that there is some pre-established harmony between sound and sense; but the facts clearly show that the actual sounds are arbitrary, at least within the easy compass of the vocal organs. We content ourselves with pointing out the logical conditions of language, and leave to others to guess at the physiological and psychological structure which leads to its realization.

If the view expounded be correct, language depends on thought. Before the word, there must be the meaning. Thought must establish its classes and its short-hand symbols, or the vocal sign will be only a noise. This sign has a double function, — the communication of thought, and

the registration of thought. The generation of thought must be sought elsewhere. This order, however, has often been inverted, and thought has been made the product of language. The truth in this notion is, that language as a register of thought may very greatly abbreviate the work of thought. Every word expresses the result of a process of abstraction and generalization; and we who inherit a language find a vast amount of mental work done for us. We have simply to understand the language, not to construct it. The difference is at least as great as that between understanding a demonstration and inventing one. A very commonplace student can understand what only Newton or Laplace could discover.

But language not only serves thought by storing up its results and abbreviating its processes, it also often misleads thought, and thus becomes responsible for much error. Some of the chief blunders of speculation have been diseases of language. Its vagueness and ambiguity, when applied to many facts, are sources of mistake; but its chief danger lies in the fact that it can be used without due regard to the underlying thought. In this way phrases, doctrines, and even philosophical systems, have been constructed, which have the most swelling sound but are empty of the slightest substance. While, then, thought must always be indebted to language, it must at the same time exercise critical supervision over it.

In studying the genesis of judgments, we may consider either the logical or the psychological order. In the former case we should decide that judgments of sensation are basal, as the raw material is directly given, and we have only to recognize the likeness or unlikeness which exists. Judgments of time, space, and number would come next, and, last of all, judgments of substance and causation. But though this may be the logical order, it certainly is not the psychological order. The central idea around which the

mental life spontaneously grows is that of things. This is the idea which supports all the rest, and to which, in one form or another, all others attach themselves. Qualities are qualities of things; relations are relations of things; numbers are numbers of things; activities are activities of things. In spontaneous consciousness, judgments of sensation are never actually made until there has been a considerable practice in abstraction. Our first judgments are not that we have sensations or perceive phenomena, but that we perceive things. That a sense object is only a phenomenon or bundle of qualities, is a proposition which spontaneous thought cannot even understand. So little is it true psychologically that things are built up out of perceived qualities, that the converse is rather true, that qualities as such are reached only through the analysis of things. The changes in a sense aggregate first teach us that it has separable qualities; and it is only after the experience of such change that we distinguish the thing from its qualities. Until then it is all thing and no quality. In like manner, the idea of causation arises only as the changes and movements of things are discovered, and thus the notion of activity is reached. The notion of number first arises through the experience of similar things. Whenever we first come upon the mind in its spontaneous working, we find it dealing with things. The categories inherent in our mental constitution give a form to experience, and produce original syntheses, before the mind itself becomes conscious of its own aims and the principles which govern it. These syntheses are not the product of reflection, but the outcome of our mental nature; and when the psychologist comes to study them, he cannot hope to come upon them in the making, but only to find the mental principles on which they depend. His work will consist in taking apart what the mind has, by the necessity of its nature, joined together, and not by any means in helping the mind to construct its

world of thoughts and things. This construction was at once too complex in its nature and too important for practical life to be left to our devices; and a law of our nature does for us far better than we could do for ourselves.

But this question of psychological priority in the order of judgments has no speculative interest. That which has made it seem so important is the fancy that, if we could only find the psychologically first, we should discover the true original of intelligence, and might regard all later manifestations as phases of that first element. This mistake has already been sufficiently dwelt upon.

Spontaneous thought gives us the world of things as it exists for perception, and the world of thought as it exists in language. It brings neither of these worlds, however, to a point where all the demands of reflective thought are met. Spontaneous thought remains on the surface of the world of things, and its thought world is vague and inexact. When it comes to science, the classifications of common sense often have to be abandoned altogether, as being superficial or mistaken; and its terminology is so inadequate or misleading, that a new one has to be created outright. In order, then, that knowledge shall be assured and extended, it is necessary that reflective thought begin. In this the mind seeks to become conscious of its own laws and principles, to give an account of its processes and aims, and to render our spontaneous conceptions and judgments more clear and exact. The doing of this work is the especial function of logic.

The treatment of the judgment in formal logic is often entirely false to its psychological character. Fundamentally, a judgment is the establishment of a relation between the content of two notions. This relation does not exist between the notions as mental acts, but only between their logical content. But this relation does not admit of being reduced to a single form. Judgments take place under all

the categories, and vary accordingly. We have judgments of things, and judgments of their various relations of space, time, number, quantity, dependence, likeness, and unlikeness, and, finally, judgments of the relations of these relations. Attributive judgments take place under the category either of substance and property, or of subject and predicate. Judgments of dependence depend on the category of causation. Spatial judgments depend on space and its subcategories. Quantitative judgments depend on the category of quantity in its various forms. In the attributive judgment, the predicate *P* is declared to belong to or inhere in the subject *S*. That is, whoever thinks *S* in its completeness must include *P* as a part of its content. In the causal judgment, *P* is declared to be the effect of *S*. In the quantitative judgment, *P* is put equal to or greater or less than *S*. In the classificatory judgment, *S* is included in the class *P*, or the mark *P* is affirmed of *S*. Each category has its own type of judgment.

For various technical reasons, logic has not recognized this fact, but has sought to reduce all judgments to a single type. The traditional logic has regarded subsumption as the essential form of the judgment. Subject and predicate are class terms, and their only relation is that of inclusion or exclusion. Accordingly, to say that snow is white means that snow is included in the class of white things. This meaning can indeed be derived from the judgment; for snow would not be white if it were not included in the class of white things. But at the same time it is plain that psychologically such a rendering of the judgment is false. Psychologically, the judgment is one of predication, and not of inclusion; and the meaning is, that white is an attribute of snow. It would never occur to any one but a logician to think first of a set of white things, and then to identify snow with one of the set.

Indeed, so far from viewing subsumption as the essential

form of the judgment, we must rather regard it as an artificial type, which seldom or never occurs in spontaneous thought. Even when both subject and predicate are nouns, the attributive character of the judgment is still apparent. Thus, Iron is a metal, means that iron has the properties of a metal, and not that iron is included in the class of metals. Or if we say that oaks are trees, we do not think of the general class of trees and then put oaks in the class, but we mean to attribute to the objects denoted by oaks the properties signified by tree. Indeed, the attributive judgment is the real foundation of the subsumptive one; for how could things be subsumed under a class, if they had not the attribute which the class mark implies? The logical reading may be allowed for convenience' sake, but only so long as it does not pretend to be a true rendering of the psychological fact, but confesses itself to be a logical makeshift.

It is manifestly impossible to apply the principle of subsumption to such judgments as that *A* is to the right of *B*; *A* is later than *B*; *A* is longer than *B*; $A = B$, etc. The absurdity of the principle when applied to mathematics has always been so evident, that some logicians have sought to save it by denying that logic has any application to mathematics.

Some modern innovators have thought to reduce the relation of subject and predicate to that of identity. If snow is white, of course snow must be identical with some white thing, namely, snow. If iron is a metal it must be identical with some member of the class of metals, that is, with iron. Hence, "Iron is a metal," can be read, "Iron = iron-metal." Here, again, the grotesque reading may be allowed if there be any gain in it; but the psychological distortion is even worse than in the preceding case. Both views were constructed without reference to psychological truth, but only to the exigencies of logical rules.

But it is not our purpose to give any list of judgments and their classes, but only to call attention (1.) to the difference between the actual judgment of the mental life and the artificial judgment of the logicians, and (2.) to the fact that the categories are the principles under which judgments take place.

In the judgment we first come upon the ideal distinctions of truth and error. Many of our mental states represent nothing beyond themselves. They are simply facts, and as such are neither true nor false, but simply real. Again, many connections of mental states are of the same sort. They cohere by the force of association, but this coherence is accidental and represents no truth. It is different with the judgment. The relation of ideas in the judgment is not merely a subjective fact in the individual consciousness, but claims to represent an independent truth.

This claim presupposes an order existing independently of individual volition and consciousness. This may be an order of fact or an order of reason. In the order of fact there are certain things in certain relations and with certain laws. In the order of reason there are certain ideas which belong together, and others which are mutually repugnant. Judgments are true which agree with this order; those are false which depart from it. In the true judgment conceptions are joined which in the nature of things or in the nature of reason belong together; in the false judgment conceptions are joined which in the nature of things or in the nature of reason should be kept apart. What that order of fact and reason may imply, and what the nature of its existence may be, we leave to metaphysics to inquire. In actual experience we distinguish the order of fact from the order of reason; and our judgments have constant reference to one or the other.

It is this reference which underlies what we call conviction, belief, assent, etc., and which gives the judgment its

objective character. On this point there has been a curious uncertainty among logicians. Some have insisted that things are united in the judgment; how otherwise could the judgment have objective significance? Others, seeing that things are not in the mind, and that the mind can never get beyond its thoughts of things, have held that only thoughts are united in the judgment. Neither view expresses the fact. The judgment as a process is of course subjective, and the elements of the judgment can never be more than our conceptions; but their union or separation claims to represent an order of fact or reason which is independent of the judgment itself. This constitutes the objectivity and universality of the judgment, and expresses our conviction. What happens in assent or dissent beyond uniting or separating ideas, Mill declares to be a most intricate problem. The surplus consists in the tacit reference to a fixed order with which our thought agrees.

The judgment, then, is an attempt to reproduce in thought some fact or synthesis of the universal order. We learn what these facts and syntheses are, from three leading sources, — experience, inference, and insight, or intuition.

Concerning the first two there is no dispute. Experience and inference from experience are by universal consent the only source of knowledge of the world of fact except so far as the latter falls into the necessary forms of intelligence. Concerning the world of reason there is debate. One school holds that in this world there are universal truths, which the mind discerns by its own insight and takes on its own warrant. They are not held because the mind has found them to be true in experience, but because it perceives them to be necessarily true. Another school holds that the only warrant for believing anything to be true is that we have found it true in experience. Apart from this, the mind has no standard of true or false, possible or impossible; in particular, it is utterly unable out of itself to dis-

cern any truth whatever. A famous formula for this doctrine is, that, for all we can say, two and two may make five in some other planet. This is the philosophical aspect of the debate between the rational and the sensational school of philosophy, to which we referred in a previous chapter.

In inference a relation is established between the subject and predicate of the conclusion, generally by means of their relation to some other notion or notions. If two things agree with a third thing in the same respect, they agree with each other in that respect. If one agrees and the other disagrees, they disagree with each other. The important thing is to establish a relation between the subject and predicate of the conclusion. This may be done by comparing them with one thing or with many; in either case the conclusion is valid. The so-called fallacy of four terms in logic does not consist in the fact that the terms are four, but entirely in the fact that the premises establish no relation between the subject and predicate of the conclusion.

Actual inference does not proceed according to any one method. Sometimes a thing is subsumed under a class, and then the marks of the class are affirmed of the thing. This is the method of subsumption, and has been falsely assumed to be the only method.

But quite as often we proceed by the method of substitution. That which is true of a given thing is true of all equivalent things in so far as equivalent. We may, then, for the given thing substitute any equivalent thing and draw the appropriate conclusion.

By using a little violence, we might make the latter method include the former; but this would only gratify the logical lust for unity, and would in no way remove the fact that the mind actually follows both. Many forms of inference do not rest upon logical analysis, but on a direct intuition of the relations specified in the premises. Thus,

A is earlier than *B*, and *B* is earlier than *C*; hence *A* is earlier than *C*;—or *A* is to the right of *B*, and *B* is to the right of *C*; hence *A* is to the right of *C*;—or *A* is larger than *B*, and *B* is larger than *C*; hence *A* is larger than *C*. Without the intuitions of space, time, and quantity, these premises would be impossible; and the inferences are reached through intuition of the relations affirmed in the premises. We do not analyze the terms, but construct the relations and see the conclusion. But we must leave to logic to develop the various forms of inference.

We have seen that the logical doctrine of the judgment is highly artificial, and often does violence to the psychological fact. This charge is even more applicable to the logical doctrine of inference. The traditional logic has held that all reasoning is upon class terms, and has had to resort to unspeakable distortions to provide for quantitative and substitutional reasoning. Language, again, admits of the inversion of subject and predicate; and this fact has been made the basis of an elaborate doctrine of mood and figure, as if the accident of language were the foundation of thought. Finally, under the influence of Aristotle, and the fancy that all reasoning must be subsumptive, one of these figures was decided to be the perfect figure; and a highly complex verbal mechanism was devised for reducing all the moods of the imperfect figures to the perfect one. The ingenuity was boundless, but the procedure was artificial, and the product absolutely worthless. There was no pretence of psychological truth, or even of increased practical facility, but rather a barren study of verbal permutations, in which, moreover, the real nerve of inference was for the most part overlooked. In its latest form of symbolic logic this tendency has reached its climax by becoming purely mechanical.

We return now to the question whether there are any truths of reason which are intuitively discerned. This

question divides into two: (1.) Are there any universal truths? and (2.) How do we recognize them as such? These two questions are seldom separated; and the doctrine of empiricism has always been vague and unsteady in consequence. Many empiricists have held that there are truths which are universally valid, but we reach them not by direct insight, but by inference or abstraction from experience. This was the general view until the time of Hume, and in some belated minds it survives still. Others hold that we know nothing of universal truths, but only of rules which are valid within the limits of experience, with what has been naively called "a reasonable degree of extension to adjacent cases."

The former view is forced to pass over into the latter. For since the truth is not known by direct insight, it must be derived in some way from experience; and we have to show how a particular experience can prove a universal truth. But without the aid of some principle, no particular experience can carry us beyond itself; and if that principle itself is not self-evident, it also needs proof. Strict proof, then, is impossible without some self-evident principles somewhere which the mind takes on its own warrant; for in that case proof would never come to an end, and nothing would be proved. Hence, either we must credit the mind with a power of knowing some things on its own account and warrant, or we must pass on to the second phase of empiricism, and hold that we have no ground for believing that any truth is strictly universal.

To empiricism in both forms mathematics has been a perennial stumbling-block. We have here a great body of apparent truth, which seems to be valid everywhere and always, and which is not abstracted from experience or proved by it. For mathematical truth there is no source beyond the mind itself. The science is built upon the basis of definitions, and the corresponding intuitions. To

see that a straight line is the shortest distance between two points, we make no experiments, but construct the problem in thought. Most of the conceptions dealt with, also, have no analogue in experience, but are generated by the mind itself. Roots, logarithms, differentials, integrals, are examples. The mind evolves such notions out of itself, and deals with them by its own insight. And even in cases where the quantities admit of representation, experience is still unable to deal with them because of their vastness, or the fineness of perception and measurement required. The products of large quantities, the properties of curves, the ratio of the circumference of the circle to its diameter, are examples. In all these cases the mind works by methods of its own invention, and tests these methods by its own insight. Proof and disproof are alike impossible to any form of objective experience. Either, then, we must allow that the mind is able to know some things on its own account, or we must drag the whole system of mathematics down into ruin, and say that, for aught we know, two and two may make five in some other planet. But why five rather than fifty, or five hundred, or three, or nothing, would be hard to say; or why in another planet, and not in another street or another moment, or for another person, would be equally hard to say. Indeed, it would be difficult to give any reason why two and two should not equal all these things at once, and at the same time be unequal to all at once. The condition of absurdity is the existence of a rational standard; and when this has been struck down, there is no longer anything irrational or absurd. Hence, until the empiricists have either overthrown mathematics, or shown the experience upon which mathematical truths are based, it seems safe to hold that the mind is able to know some things by its own insight.

Facts which are immediately given in experience, and

propositions which are either proved or directly seen to be true, are elements of knowledge. Besides these, there is a great realm of belief. This comprises all propositions accepted as true whose denial would involve no contradiction of consciousness, and no violation of the laws of thought. Most of what is practically important in life lies in this realm. If our mental possessions should suddenly shrink to what we know, the residue would be paltry and pitiable in the extreme. It is only by venturing beyond knowledge that a social, or even a mental, existence becomes possible.

To this realm of belief belong trust in testimony, the practical faith of man in man, our faith in the uniformity of nature and the whole department of scientific and speculative theory. This theory is throughout an attempt to rationalize our experience, and rests upon assumptions which while practically necessary are forever speculatively undemonstrable.

In this realm we attain to practical, in distinction from theoretical, certainty; and for life and practice the former is often as good as the latter, and perhaps even better. In fact, the human mind is adjusted to easy belief; so much so, that the function of argument and criticism is less to produce than to reduce belief. We generalize hastily; we take for granted that what has been will be; and we deduce a law from a very scanty experience. This fact has probably a teleological explanation; and in any case it is a highly fortunate circumstance. It is the source of that practical certainty which is necessary to our orderly mental life. If man had to wait to reason out his way, he would never get started, and if he should start would soon stop. For beings with our feeble insight and practical necessities, some other and shorter way was necessary; and this was provided by so adjusting our constitution that a system of beliefs should spring up from our experience, not by way

of strict logical inference, but by the psychological necessities of our nature.

Very many of our beliefs are of this kind. They do not represent reasoned truths, but practical assumptions. They do not express mental inferences, but rather the mental nature itself, its tendencies, interests, the grade of its development, etc. Beliefs of this kind are not displaced by being disproved; indeed, they very rarely admit of either proof or disproof; they vanish only by changing the mental soil. They spring naturally from one kind of mental soil, and die out on another. As long as the conditions are favorable, beliefs of this kind are held with a practical certainty which surpasses logical demonstration. The psychology of belief is highly complex, and has never been adequately studied.

The same tendency which leads the mind to form classes from individuals leads it also to classify these classes, thus forming more and more comprehensive groups. It would seem that in this way we must at last come down to a single class, comprehending all others; but this is true only for limited fields of thought. In the organic world we may pass from individuals through species and genera to the most general conceptions of plant and animal; and these again may be united in the one notion of organic existence. But when we take the mental life as a whole, we come down to no such unity, but rather to a series of conceptions which admit of no further reduction. Judgments take place under the various categories of substance and attribute, cause and effect, space, time, number, etc.; and if we should classify all our mental objects, we should find distinct and irreducible classes corresponding to the categories. In this way the categories which exist primarily as implicit laws of mental procedure emerge as distinct and recognized conceptions.

CHAPTER IV.

INTERACTION OF SOUL AND BODY.

ALL but materialists distinguish between soul and body ; and this fact gives rise to a special set of questions concerning their mutual relations. We need to know, if possible, the laws according to which they affect each other, and their significance for each other. This general problem we treat under the head of the interaction of soul and body. By interaction we mean only that they affect each other. Indeed, this is all that the union of soul and body means in any case. It has become conventional with the frivolous opponents of the spiritual view to ask for the band which ties soul and body together. The band is the fact of mutual influence. Other band there is none ; and no other is needed.

The complete unlikeness of soul and body in spontaneous thought has led to a very general conviction that this mutual affection is impossible ; and many theories have been invented to escape it. Materialism and idealism go around it by denying either the soul or the body. The Cartesians invented their theory of occasionalism, according to which physical and mental states do not cause each other, but are the occasion upon which a cause above both produces one or the other, according to circumstances. Leibnitz further showed that the interaction of soul and body is nothing especially difficult, but that all interaction between any two things whatever is equally mysterious. As his solution, he proposed the doctrine of the pre-established harmony, according to which all things were so adjusted to one another in the beginning that they run

together yet without any dynamic influence. The discussion of these difficulties belongs to metaphysics. For our purpose it is indifferent what view we adopt, as we only aim to discover the law of their mutual changes. We will only add, that the fancy that the interaction of soul and body is a specially difficult problem rests upon the further fancy that matter is a series of inert lumps which act only by impact, — a whim which is absolutely groundless. The presence of a spark determines oxygen and hydrogen to unite; the affection of a nerve determines the mind to feel. One fact is just as mysterious as the other.

The first question we consider concerns the mutual space relations of soul and body, or, as it is commonly called, the seat of the soul. This question, of course, exists only on the supposition that space is real; and this reality metaphysics finds reasons for doubting. Apart from this scruple the following considerations are possible:

1. Misled by the apparent immediateness of sensation in every part of the body, many have held that the sensation is felt where it seems to be, and hence that the soul is omnipresent in the body. But the simple fact that there is no sensation unless there be continuous nerve communication with the brain disposes of this view, or at least of its apparent grounds. It is hardly credible that the soul which is in the fingers, and feels in the fingers, is still unable to feel until a nervous affection has been transmitted to the brain. Hence there is a very general agreement that the seat of the soul is in the brain. This belief, together with the assumption that action can only take place through contact, led the earlier anatomists to look for some central point in the brain in which all the nerves, sensory and motor alike, should have a common junction. Such a point, it was assumed, would certainly be the seat of the soul. The Cartesians fancied for a time that such a point had been found in the pineal gland; and this was

called the seat of the soul in the Cartesian philosophy. In fact, however, there is no such point of common junction in the brain; or we may say that there is no central station to which all messages come and from which all messages proceed.

2. Must we, then, think of the soul as omnipresent in the brain, or as located at any or all of the nerve endings? This is purely a matter of taste. The statement that the soul is in the brain means only that the soul is in direct interaction with the brain. A change in the brain is attended by a change in the soul, and, conversely, a change in the soul may be attended by a change in the brain; but it is not necessary to think them in contact. Astronomy finds no difficulty in the assumption that one atom can immediately affect another, across the whole diameter of the system, or that it can immediately affect all others at the same time. If, then, the soul is really in space, it is entirely possible that the interaction of the soul and body should occur as it does, if the soul were in the third heaven or elsewhere. There is further no need of finding some one point in the brain with which alone the brain is in contact; but just as physics teaches that an atom may stand in immediate relations to many others, so the soul may stand in immediate relations to many elements in the brain, yet without being in contact with any of them. Beyond the fact that physical and mental states may mutually determine each other, the question as to the whereabouts of the soul in the body is idle and empty. If it should turn out that space itself is only a mode of appearance, and not a fact of reality, of course the question would vanish of itself.

3. What has just been said applies only to the conscious activities of the soul. If we should assume, with some writers, that the soul organizes and maintains the body, there would be nothing to forbid the thought that in this

organic activity the soul is in direct interaction with all parts of the nervous system, though aroused to consciousness only by changes in the brain.

The use of the body by the soul is a question of far more significance. It is very common to speak of the body as the instrument of the soul; and many figures of speech are employed which are rather more definite than the facts warrant. The soul is the harper, the body the harp; the soul is the boatman, the body the boat; the soul is the agent, the body the instrument. All these expressions imply a more external relation than really exists; and they imply besides a knowledge which the soul does not really possess. How does the soul come to use the body? and, How does it use the body? are questions for special discussion.

If we had been left to discover the use of the body for ourselves, we should never have succeeded. We know directly nothing of the various nerves and muscles, and their uses. We know that we can use the body; but we know directly only the mental starting-point and the physical resultant. Of the mediating mechanism we know directly nothing; and we should be no better off if we did, as we should be quite unable to make any use of our knowledge. The wisest anatomist would find himself utterly at a loss to control his body through its mechanism, if he had to manage the mechanism directly. Indeed, so complete is our ignorance of the motor mechanism that we should probably never have even suspected that the body is usable, if movements did not originate within it apart from any purpose or control of ours.

Several classes of physical movements are to be distinguished. First and lowest are the reflex movements. These may take place without our knowledge or volition; and all we can do in the case is to control them to a greater or less extent. The system is able of itself to carry out

certain movements necessary to life; and it seems also able, under the influence of internal and external stimuli, to produce movements which have the appearance of intelligence and purpose. By the grouping of nerves and muscles, co-ordinated movements are produced in response to stimuli which are adapted to the development and conservation of the organism. Such are the movements of young animals in sucking and swallowing. Such also are the movements of coughing, sneezing, maintaining an upright position, avoiding a blow, recovering our balance, etc. If we extend reflex action to include all motor reaction against stimuli, without deciding whether the reacting agent is the nervous system or the soul, we may probably include all instinctive action under this head.

In the reflex movements the stimulus may be external to the soul. Another set of physical effects have their ground in an inner state of the soul itself. This is the case with all expressions of emotion, such as crying or laughing, and the various physical expressions of joyful or sorrowful, tranquil or excited states of mind. These are often so vehement as to produce profound disturbance of the organic functions, and sometimes death itself. Here belongs also the whole language of expression through physical bearing and appearance. This order is no invention of ours; nor do we see the least reason for it other than a teleological one. But the connection of soul and body is such that a given state of mind tends to echo itself at once in the body. The will can affect the connection only to the slightest extent. In itself it is no product of human volition or wisdom, but is rather a law of nature.

More important in our control of the body is the class of movements which spring from our conceptions, especially from our conceptions of the movements themselves and the accompanying feelings. These also precede any distinct volition. There is a tendency in our conceptions of con-

crete activity to discharge themselves upon the motor nerves. Thus in reading we detect a nascent excitation of the vocal mechanism; and many ignorant people can hardly read at all without reading aloud. Again, when we read a detailed description of a gymnastic performance with which we are acquainted, we find each step accompanied by a corresponding excitation of the motor apparatus. An uncultured person in giving an account of anything goes into the most extensive gesticulation corresponding to the matter recited. That these results are not due to volition is plain from the fact that they follow all the more surely the more we lose ourselves in the object. The effect is still more sure to follow when the conception is accompanied by some representation of the appropriate feeling. This especially appears in our attempts to imitate some movement requiring skill, or to produce a given facial expression, etc. Here we know what we want to do without knowing how to do it; and not until we have done it and distinguished the accompanying feelings are we able to produce it at will. There has been a tendency with many writers of physiological leanings to include all the cases mentioned under reflex action. This is done by extending reflex action to include all action which is not voluntary. The result is merely a verbal identification of different things, with much resulting confusion. Some go still further in the same direction, and include voluntary action under the same head; and by the same device of extending reflex action to new meanings.

We conclude, then, that we learn to control our bodies in this way. First, the reflex mechanism makes us acquainted with various movements and their accompanying feelings. Second, the connection between soul and body is such that our conceptions tend to realize themselves in corresponding action. Third, when these feelings and conceptions are produced in the mind, there is a tendency in

the organism to reproduce the corresponding movements. This order exists apart from and before volition, and constitutes the possibility of our control of the body. The will modifies and employs this order, but does not originate it. The function of the will is double in the case, inhibitory and directive. In the first case we prevent movements from taking place which would result if the nerves were left to themselves. Such are the cases in which we submit to pain, and repress outcry and movement. Self-control is manifested largely in the form of repressive action. Our directive agency consists entirely in producing in ourselves the mental state with which by a mysterious order physical effects are connected. Further than this our power does not extend. The execution of our commands is taken up by the organism quite independently of any further influence of the will. We sometimes fancy that we feel our own power flowing over upon the body, or that we feel the strain of our effort; but all that we feel is certain muscular sensations which result from muscular tension. Their use is to guide us in regulating the intensity of our volition so as not to ruin the organism, but in themselves they are effects of our effort, and not the effort itself. Our will reaches immediately only our mental states, and an independent world-order provides for the rest. The distinction between willing and fulfilling depends on this fact to a great extent.

In the previous paragraph we have seen that the physical mechanism plays an important part in the development of the mind. We have now to point out that the mind plays an equally important part in the development of the body. While the body initiates the mind, the mind perfects the body. Left to itself the soul never would learn to use the body, but the body left to itself would never come to any high development. The ease and accuracy with which physical movements follow our mental states admit of in-

definite increase, as the body itself becomes more sensitive to commands. This fact is the basis of all active physical habit and of all acquired physical facility. In speaking, writing, piano-playing, etc., we see a host of complicated movements, coincident and successive, in which the mental representation scarcely exists in consciousness at all, so rapid is the movement. This state of physical sensibility is acquired only by practice; but when reached, the work proceeds without anything but the general guidance of the will. There is a kind of wholesale willing which suffices for the process. Such a state is the stored-up result of past effort, and is due to the mind as well as to the body. The latter is simply receptive and retentive; the former originates and guides. This possibility of training the body to be the servant of the mind is of the utmost significance for our mental life. Otherwise we should be ever learning and never progressing, because of the perpetual need of doing our first works over again.

Physical habits are of two kinds, habits which modify the sensibility alone, and habits which refer to action. Examples of the former class are the acquired appetites, such as the craving for rum, tobacco, etc. The sensibility having been stimulated in any abnormal way soon comes to crave for renewed indulgence. Such habits are the indirect products of the will through indolence. What is needed for their production is no strenuous self-assertion and guidance, but only self-surrender. This is what has always made them seem unworthy and degrading. These habits result in inclination or desire for gratification.

The active physical habits arise only through a positive action of the will. No one passively acquires any active habit; but the self-determining mind must set itself a task, and laboriously dedicate itself to its realization. These habits do not result in any pronounced desire for gratification, such as attends the purely sensitive habits.

The active physical habits also may be distinguished into two classes, those in which the mental element diminishes as the physical element increases, and those in which it does not. In walking, or riding, or writing, for example, the action is almost purely automatic when it has once become familiar; and the mind is released from any but the most general control. In many cases of acquired skill, on the other hand, as in music or drawing, there is greatly increased facility, but the need of attention is as great as ever. The two classes, however, admit of no very sharp distinction except at their extremes.

How much further the influence of the mind upon the body may go, is a question not easy to answer. Some regard even reflex action as originally due to the will; so that the soul, instead of finding a reflex mechanism ready made as a condition of its later activity, really constructs that mechanism for itself. This conclusion is reached, however, by extending will to cover all the activities of the soul, the unconscious and automatic as well as the voluntary.

This view expressed with more regard to the conventions of language would be as follows. The ground of form or organic structure must be sought somewhere, either in the soul, or in the elements composing the organism, or in a third something distinct from either. But the last view is operose, and multiplies existences needlessly. The second would lead to various grotesque assumptions concerning the nature of the elements, and finally to a mystical hylozoism. Declining these two views, we are shut up to the first. On this view, the soul is an agent whose activities are partly conscious and partly unconscious. As unconscious, it constructs the body, and maintains its functions; as conscious, it appears as the mental self. The entire subject is in the profoundest obscurity; and any hypothesis we may frame must be based on speculative considerations.

The cerebral localization of mental functions has been much discussed. This doctrine is intelligible only as a claim that the nervous activity which accompanies mental action is limited to particular parts of the brain, according to the kind of mental action. There is a certain antecedent probability in such a view. The optic nerve conditions vision; the auditory nerve conditions hearing, etc. It seems, then, quite possible that certain forms of sensation are limited to certain nervous tracts. The subject, however, remains in entire uncertainty.

The phrenologists have made us familiar with brain charts and distributions of the mental powers; but the purely fanciful character both of their physiology and of their psychology has long been recognized. Their utterances in general have been highly oracular, as a necessary consequence of the pecuniary relations of the "science"; and whenever they have been unambiguous they have been guesses, or groundless.

In physiology the claim has often been made, and by many received, that distinct sensory and motor areas exist in the brain; but the facts of vicarious action seem to show that this, so far as true, is a kind of acquired division of labor, rather than any absolute and original localization. For a long while the organ of language was regarded as certainly located; but not even this fact can be regarded as certainly established. Various attempts have also been made to estimate the mental value of the brain by its bulk or weight, both absolute and relative; but they have led to nothing. A manifest short-coming of these attempts was that they sought to measure only the quantity of brain, and ignored its quality.

For the significance of our mental states, in both physical health and disease, various works on pathology may be consulted. In general, the emotions have most influence upon our physical well-being.

The facts of the previous paragraphs contain some account of the nervous waste which accompanies mental action of whatever sort. In much of our mental work there is a deal of physical labor directly involved, as in reading or speaking. The organism must be adjusted to the demands made upon it, and these are often great. Again, in much of our mental activity there is a continuous demand made upon some of the organs of sense. There is nothing strange in the nervous waste arising from such labor; for the organism is distinctly brought into play. But apart from these cases there is a waste attendant upon thinking in general, without any reference to the senses whatever. The abstract reflections of the philosopher and the unpicturable thinking of the theologian involve nervous waste, although the objects dealt with are entirely supersensible. Can we account for this in any way, or must we simply accept it as a fact?

Many have claimed, because of these facts, that our thoughts are but the transformation of the nervous energy consumed. This claim rests upon a total misunderstanding of the general doctrine of energy in physics. The common fancy is that energy is an ethereal something, gliding from one thing to another, and assuming various forms in the passage. This is sheer mythology. Energy must always be the energy of something, and cannot exist in the void without a subject. In the physical theory, the elements are the subjects of the physical energies. But these are in such relations to one another that a given element, *a*, may arouse energy in another element, *b*, at the cost of its own. This is the transference of energy; and, as in the case of the transference of motion, there is no proper transference, but a propagation.

Again, in this propagation the new state produced may be qualitatively unlike the antecedent. The antecedent, electricity, may have for consequent heat, light, motor

power, etc. This qualitative change is the transformation of energy, and consists simply in the qualitative unlikeness of antecedent and consequent.

If the antecedents and consequents be measured by some dynamic standard, they are found to be dynamically equivalent in spite of their qualitative differences. This is the conservation of energy.

How far this is from the rhetorical whim of a Protean energy passing from thing to thing and from form to form is evident. Except in a figurative sense, there is no transference and no transformation. If then the brain should expend energy in arousing the mind to activity, there would be no passage of physical energy into mental energy, but an expenditure of the former in inciting the mind to develop the latter. Whether such expenditure occurs cannot, of course, be known. It may be that thinking costs the brain something; and it may be that each nervous antecedent is fully accounted for in its nervous consequent. A decision can be reached only on speculative grounds, and then can have only some slight measure of probability.

The share of the brain in thinking may be conceived as follows. The interaction between mind and brain is mutual. A given nervous state tends to produce a specific sensation, and, conversely, the thought of that sensation tends to reproduce the corresponding physical state. This is seen in its most striking form in the sensations which arise from expectation or belief. In such cases the nervous system is so strongly affected that the sensation is really produced. So also, in the remembrance of an odor, a color, or a flavor, a nascent excitation of the appropriate nerves is perceptible. A familiar example is the so-called watering of the mouth at thought of some savory dish. In the representation of form, also, something of the kind is probable in the visual tract. Hallucinations, resulting in the vision of unrealities, reveal such a tendency. The same

fact in the case of language has already been referred to; and, as all thinking largely proceeds by means of words, we see a measure of physical activity even in abstract thought. Certain forms of memory seem even conditioned by this physical participation; for example, it appears impossible to recall a piece of music faster than we can hum it. Finally, thought is very often attended by emotion; and this too has its physical effects, which in general are more marked than any others. Thus we see that any mental state whatever implies nervous action in one form or another, and hence nervous waste. Indeed, this mutual sympathy of soul and body is not even strange, if we assume that the body itself is maintained only through the organizing activity of the soul.

This subject is often confused by speaking of nervous exhaustion, instead of nervous waste. The exhaustion felt is our own, and whether it is due to the nervous waste or to our own effort is not clear. From continued action, the nervous system becomes less responsive to mental demands; and it may be that this state of the nerves is the ground of our feeling of exhaustion. But it is equally possible that pure mental functions are periodic, so that continued effort and attention must be followed by rest and relaxation. And even allowing that the nerves are the ground of our exhaustion, they may be such only indirectly; namely, by opposing increasing inertia to mental activity, and thereby demanding intenser effort on our part, and also by producing a great variety of uneasy feelings, which distract our attention and thus hinder mental progress. In that case the exhaustion would still arise within the mind itself from its relation to its own activities. It may be, then, that the exhaustion arises entirely from the mental effort; and that this would arise from the same amount of effort if the nerves showed no waste, or even if the body were entirely away.

The significance of the body for the mental life admits of no precise definition. For the materialist, of course, the body is the only ground and source of the mental life. But even for the spiritualist, the body must have such significance as to suggest the question whether the mind is not really dependent on the body in the performance of its own functions, so that the disappearance of the body would mean the cessation of the mental functions. As a matter of fact, we do find mental disease, in its two great forms of idiocy and insanity, connected with some abnormal physical conditions. We find physical conditions also leading to a general weakening of memory and of the rational power, and often to utter unconsciousness. Here, then, is a great body of facts which suggest that the mental life cannot go on without the physical. Can any light be thrown on this question?

In dealing with the problem we must first look for some undoubted facts, in the hope that from them we may find our way to the understanding of the rest. Now, the first fact of this sort is, that the body is the instrument whereby the soul gets all its impressions of the outer world. It is further clear, from what we have seen in treating of perception, that, to have an orderly mental life, these impressions must constitute an orderly series or system of series. If they are disorderly or incoherent, the soul has no manageable material to work upon; and the rational nature fails to develop. The result is idiocy, varying in depth with the physical imperfection from which it springs.

Or we may suppose this disorder to begin after the rational life has been developed into coherent forms, and sensations have become the signs of certain objects. If now the disorder result in producing sensations without the presence of their appropriate objects, there will be a series of hallucinations. If these sensations be of a strange and distressing nature, there will be a vision of correspondingly

frightful objects. The known laws of association working upon the sense data would not fail to present manifold uncanny or terrific objects to the mind. These objects, again, by the same laws and by the automatic connection of mental states with the motor system, would not fail to call forth corresponding action. The result would be delirium or insanity. In this case the mental action would be normal or rational under the assumed circumstances. The fault would be in the sense data, and to correct them would discharge the insanity.

We know that a long-continued strain of mind often makes it impossible for us to banish our objects. They haunt us to weariness and because of weariness. Such a fact is explained by an overwrought state of the nerves, whereby they fail to return to their equilibrium of indifference. If, now, parts of the nervous tract should become permanently excited in this way, but to a still greater degree, we should have a tendency of certain forms of experience to take and maintain possession of consciousness; and these, working together with the past experience of the individual, would produce "fixed ideas" of one kind or another. Here an unmanageable experience is thrust upon the mind from without, the limits of self-control are transcended, and insanity of a certain type sets in.

A certain amount of fixity in the elements of experience is necessary to rationality. Without it there can be no discrimination, comparison, or judgment. Illustration is found in the rapid passage of objects across the field of vision. When the rapidity is too great, the mind fails to identify or retain anything. The same thing is seen in the wild flight of ideas in delirium. Nothing is fixed or stable enough to allow the mind to grasp its objects in rational comprehension. If, now, the nervous system should acquire abnormal mobility of its parts, so that the physical changes which are attended by mental states should suc-

ceed one another with great rapidity, something of the same kind must happen. Rational reflection would be impeded, if not impossible; and the tendency would be toward obliteration of rationality altogether.

Mental work is greatly aided by physical helps in many ways. Compare, for example, the labor of solving a geometrical problem, or of multiplying a long list of figures, in the mind, with that of doing the same work when the diagrams are drawn or the figures written down. The physical symbol helps the mind to keep the problem steadily before it, and leaves it free for purely rational effort. Such facts prove that there are nervous states which can greatly assist the mind in some of its operations. But the facts of the two preceding paragraphs make it very probable that something of the same kind exists in all thinking, because of the connection of thought with language and with physical images. If this be so, then any disturbance of the brain whereby it should affect the mind only in a coarse and gross manner, or whereby it should become less sensitive to mental states, would impede rational activity as much as it would embarrass a mathematician to take his pencil and paper away from him. More than this, it would tend to repress rational activity; for so long as the mind is subject to such an order of interaction with the body, a disturbance in either member must reflect itself in the other. If, in addition, this state of the nerves should be the ground of various vague and disturbing states of consciousness, which should haunt the mind and distract attention, the higher forms of mental action must be profoundly disturbed. We have constant illustration of such disturbance in the inability to think, to fix the attention, and to store up facts for recollection, which attends the weariness of every day and ends in unconsciousness every night.

The integrity of mental action is very much affected by our general state of physical feeling. Great changes in

this feeling, so that we are haunted or stormed upon by queer and uninterpretable sensations, are sure to result in mental hallucination, unless there is a well-knit scientific habit of thought which prevents our giving way to the illusions which would otherwise arise. It is out of such queer and abnormal feelings that the delusions of the hypochondriac, etc. arise.

Again, the interaction of soul and body extends, in all probability, far beyond consciousness. If we allow the soul any formative influence upon the body, we admit an organic interaction which is not conscious. Yet the interaction upon which consciousness depends can hardly be a separate and unrelated one, but must rather be a particular phase of the other. In that case an abnormal state of the organism must form an impediment to the normal activity of the soul in its organic manifestation; and because of the unity of the soul, such disturbance of its activity in one realm could hardly fail to have significance for its total activity.

These considerations show that, while the soul is connected with the body, the condition of the body must have the profoundest significance for the mental life. We believe, also, that they explain in principle all the mental disturbances and aberrations which arise from physical conditions. We say "in principle," because there is no theory which enables us to explain each fact in detail. The most thorough-going materialism is as unable to explain the detailed facts of our mental dependence on physical conditions — for example, peculiar loss of memory — as any other theory. But the same inability to follow our principles into details meets us everywhere, even in the laws of mechanics. We may be perfectly sure that the simple laws of force and motion determine every movement in the physical universe; and yet we cannot trace them except in the simplest instances.

We return now to the question with which we started. Can the mental life go on apart from the body? Taken by themselves, the facts admit of a threefold interpretation. We may regard the body (1.) as producing mental functions, (2.) as necessary to mental functions, and (3.) as interfering with and repressing mental functions which it does not produce, and to which it is not necessary. The first interpretation is excluded by the untenability of materialism. Between the other two, we must observe that the facts are all negative. They do not show us the body as necessary to the performance of mental functions, but as interfering with mental functions. We have also seen that the existing connection between physical and mental states is purely a factual one. Neither is seen to imply the other; and, so far as we can see, they could exist equally well apart. When once a mental life has begun, and a store of ideas has been accumulated, it seems quite possible that a self-enclosed thought life might continue thereafter in entire independence of any organism. No necessity for an organism appears, except for communication with the outer world. Without it, the soul would be restricted to itself, having no experience of the world beyond, and no power to act upon or in that world. In fact, all that is needed here is a system of interaction with externality, whereby the soul may receive impulses from without, and may produce effects beyond itself. On the idealistic theory, that is all that even the present organism amounts to.

The abstract possibility of our existing apart from the body admits of no dispute; but this is far enough from proving that we shall so exist. Yet the fact that the soul cannot be identified with the body shows that the destruction of the body contains no assignable ground for the destruction of the soul. The indestructibility of substance, also, upon which physics is based, would suggest that every real thing must be assumed to continue in existence until

its annihilation has been proved. If, then, this subject is to be argued upon the basis of our customary ideas, the burden of proof would lie altogether upon the believer in annihilation; for the soul is real, and must be assumed to exist until its destruction has been shown. Of course, such a showing is impossible; and hence the presumption must remain in favor of continued existence.

To this it is urged in objection, that such a claim would imply the continued existence of brute souls; and that this would be absurd. In fact, the absurdity lies altogether in the unfamiliarity of the notion. That many forms of animal life should exist at all is as great an absurdity as could well be conceived. That they should continue to exist would be no greater one. The question, Of what use would they be hereafter? is offset by the equally unanswerable one, Of what use are they here? We need not reflect long to see that our artificial and anthropomorphic notions of the fit and the unfit cannot well be applied to cosmic problems.

In fact, however, none of our customary ideas will help us in this matter. Metaphysics convinces us that the entire system of finite things has its ground of existence, not in itself, but in one Infinite Being, who is the fundamental reality in all existence. No finite thing, then, has any inalienable right to exist by virtue of its title of substance, or from any other metaphysical ground whatever. Every finite thing, whether material or spiritual, begins to exist because the nature or plan of the Infinite calls for it. If that nature or that plan should no longer demand its existence, then that thing would cease to be. We can only lay down, then, this formal principle: Those things that have perennial significance for the universe will abide; those which have only temporary significance will pass away. But this principle admits of no specific conclusions on our part. We cannot tell what the plan of the Infinite may

include and what it may exclude. It already includes so much that we should have rejected, that we can hardly help concluding that the data of the problem lie beyond our grasp. The only thing to which we can attribute an absolute worth is moral goodness, or the moral personality; but this is a consideration drawn from the moral nature, and not from metaphysical speculation. In short, if the moral nature demands continued existence, or if any word of revelation affirms it, there is no fact or argument against it. On the other hand, apart from the moral nature and revelation, pure speculation must occupy a somewhat agnostic attitude upon this question.

It will be seen that viewing this question from the standpoint of values, instead of metaphysics, removes the embarrassments involved in the immortality of brutes. Whoever urges their immortality must show some absolute value in their existence which demands it. The simple fact that all have souls would by no means imply an essential likeness of nature. Souls are souls, no doubt; and so are metals metals. And just as belonging to the one class of metals does not exclude incommensurable differences among the members of the class, so belonging to the general class of souls would not exclude classes of souls which should be on different planes and have impassable gulfs between them. As the coefficient of elasticity is different with different substances according to their specific nature, so the coefficient of mentality may have different values for different souls.

As a matter of fact, this coefficient varies greatly even within the limits of the human species. There are many differences of temperament, talent, taste, and disposition, which are not due to training, but belong to the personal constitution. In addition to being a specimen of humanity, each one has his personal equation, whereby he is rendered an irreducible individuality. Of the foundation of these

differences nothing is known. Differences of temperament are commonly referred to some physical ground; but what it is is a matter of surmise. The attempt to refer all mental differences to a physical source, apart from the fact that nothing is known of that source, rests upon the highly improbable fancy that all are strictly alike. Why the spiritual world should be so full of uniformity or monotony, is not entirely apparent. In truth, we are misled in such attempts by a misapprehension of explanation; and as a result, we go through the form of making the motions, of explanation, and forget to inquire whether we are really getting ahead.

CHAPTER V.

SLEEP AND ABNORMAL MENTAL PHENOMENA.

IF we take the conscious activities of our normal waking moments as a standard of reference, experience shows many departures therefrom. The most familiar of these is normal sleep.

The causes of sleep are not fully understood. At first sight, physical exhaustion seems to be the evident cause; but this is not the only factor; for there can be great weariness without sleep, and sleep can be produced without weariness. Being too tired to sleep is a familiar experience; and, on the other hand, sleep is often produced by an easy physical position, a monotony of idea, or simple mental emptiness. A case is recorded of a lad whose senses were limited to a single eye and ear, and who could be put to sleep simply by closing the eye and stopping the ear. A variety of gentle manipulations, also, such as stroking, combing the hair, and the like, have a marked soporific effect. The effect of ennui is well known. In various forms of mesmeric experiments, also, the same fact is seen. Certain rhythmic movements of the body, as rocking or swinging, are also soporific. Finally, the action of anæsthetics in producing sleep is noteworthy. None of these cases can be brought under the head of exhaustion; and except in the last case none of them can be shown to produce any chemical products to which sleep might be referred. Further, the suddenness with which in many cases sleep may follow upon the most complete mental activity forbids any thought of a gradual exhaustion of nervous force. Many persons are at their best at night. In short,

the immediate cause of sleep is not known. If we refer it to a periodicity of either physical or mental functions, we merely construct a phrase; and if we insist that it has physical grounds, we cannot tell what they are, nor how they are connected with the effect.

If we measure the depth of sleep by the amount of stimulus needed to awaken the sleeper, we may say that this depth is a varying quantity. In general, it is deepest directly after going to sleep. The amplitude of the sleep-curve reaches a maximum from which it soon declines, and remains nearly constant until waking. The depth varies greatly with different persons, some being light sleepers and others sound sleepers. It also varies with the same person according to his habit or state of mind. When we have something on our mind, or when we are to rise at an unusually early hour, sleep is often fitful and disturbed.

The depth of sleep is variable in another respect, in that stimuli of the sensory nerves may work upon the mind and produce their appropriate sensations. The reaction of the mind upon these may take the form of simple association of the impressions, or of a rational interpretation of them. Questions may be answered, and even various activities originated in connection with them, yet without leaving any abiding impression upon the memory of the sleeper.

Out of this fact comes the explanation of the fantastic character of dreams. The power which is pre-eminently in abeyance in sleep is that of rational attention and self-control, upon which the higher forms of consciousness depend. The result is that any disturbing sensation that may arise has the mind to itself. It is not confronted by the realities of visual experience; it is not compared with the system of waking experience; it does not pass under the scrutiny of the judgment; and hence its nonsense or absurdity remains unperceived. The laws of association

are left free to work it over by any hap-hazard connection of experience, or to give it any whimsical form whatever. In our waking moments, when we allow the laws of association similar play, we have similar disconnected and wild vagaries; and if we took them for real as we do in dreams, we should have essentially the dreaming state. In the latter, our objects are seldom compared with reality or with past experience; and all measures of time, of rationality, and of possibility are lacking. Hence we are rarely surprised at anything in dreams, but view the most extraordinary event as a matter of course. This failure to estimate the true significance of action and experience in dreams often results in the greatest emotional indifference to the most shocking deeds. But for this quiescence of the judgment, sleep might become a perpetual nightmare.

The dream consciousness is often originated by actual sensations, which are then worked over into some grotesque but correspondent form. These sensations may be peripherally or centrally initiated. Many experiments have been made to test the effect of special sensations in initiating or determining dreams, and the results are sometimes striking. Actual sensations, when not the source of the dream consciousness, often modify it. Along with the dream goes a vague consciousness of the body and its actual condition, and this becomes a factor of the dream itself. This is probably the reason why we sometimes dream of being in undress in public.

The peculiar sense of failure in most dreams which relate to physical activities seems due to the fact that the appropriate senses fail to be deceived. Thus, it is peculiarly difficult for many to persuade a gun to go off in a dream. This apparently results from the unwillingness of the ear to lend itself to the deception; and the noise being lacking, there is a sense of failure which explains itself as a missing fire on the part of the gun.

Dream activity may sometimes rise to the height of sustained rational effort, but very rarely. As a rule, we do little that is worth while in dreams. Instances are reported of a high order of mental action and insight in the dreaming state; and most persons have had experience of something of the kind. This experience, however, is often illusory. If we succeed in catching or recalling the profound or witty saying, we generally find it shallow or flat enough. The wit and insight turn out to be as illusory as dreams in general.

The materials of dreams are all drawn from waking experience. There is no revelation of strange powers or strange forms of mental action. The prophetic character of dreams finds no support in experience, except very rarely in cases of disease; and here the dream is probably due to the disease which has already, though secretly, begun. At the same time, dreams seldom reproduce actual experience, and never without modification. The things we deal with during the day by no means always furnish the material of our dreams. Indeed, it is rather the rule that the dream withdraws us into a fictitious world, so that it is oftener creative than reproductive.

No single explanation of dreams is possible, as dreams do not fall into a single class. Dreams are often grotesque and incoherent; but sometimes they are rational and coherent. Sometimes the most alarming situations cause no fear, and sometimes they fill us with terror. Sometimes there is the utmost emotional and ethical indifference to the most distressing circumstances; and sometimes there is extreme sorrow or remorse. The most prominent form of mental activity in dreams is that of association apart from any rational control; and this has led to the claim that in dreams the will is asleep. But this is by no means always the case. While the associative activity is in general the leading one, the other forms

of mental action, as will, rational thought, and creative imagination also appear to a greater or less extent.

The most marked distinction between waking fancies and dreams is the greater vividness and objectivity of the latter. In dreams we appear, not to fancy, but to perceive. In explanation, it is said that our sensations are always projected outward in our waking moments, and that dreams do but follow the same law. This would suppose, however, either that dream objects are always founded on sensations, or that the mind produces the sensations appropriate to its conceptions and thus reaches a ground of objectivity. Again, it is said that the reason for the greater objectivity of objects in dreams over waking fancies is due to the fact that the latter are constantly compared with the real world of things, and are thus made to appear in their subjective nature. In dreams our fancies are not thus compared, and hence assume to be real objects. This explanation, however, cannot get on without assuming that the mind tends to project its objects under the forms of thought.

Sometimes a dream may be acted out. This is the case in somnambulism. Sometimes the dream adapts itself to the external situation; and sometimes it assimilates objects to itself. Sleep-walking illustrates the former; the fondling of inanimate objects, say the pillow, illustrates the latter. Fortunately, sleep is generally accompanied by an inhibition of motor activity: otherwise every dream involving the representation of bodily movement would drive the dreamer out of bed.

The question is often raised whether the mind is ever completely inactive even in sleep. This involves the relation of dreams to sleep. Some hold that dreams indicate imperfect sleep, and others claim that they are the general form of mental activity during sleep. Apparently sleep is often dreamless; but the claim is made that this is due to a failure to remember our dreams. This is not so vio-

lent a supposition as appears ; for the leading characteristic of dreams, as disconnected and irrational, makes them especially difficult to remember. The bulk of the day's experience is forgotten before night ; it would not, then, be strange if the bulk of the night's experience should vanish before day. Hamilton sought to test the matter by having himself frequently awakened. He claimed that he always found himself dreaming. It is a common experience to find on waking that we have been busy with something ; though this quickly escapes us, unless we grasp it at once. To this it is replied, that these dreams are only the transition from sleeping to waking, the first stirrings of reviving intelligence. On the other hand, we often find persons giving all the signs of dreaming in their sleep, yet without any memory of their dream on waking. The somnambulist seldom, if ever, recalls his dream. Plainly memory is no test of past mental activity ; for memory does not retain the details of our waking life from one hour to another, and often not from one minute to another. The continuity of mental action is certainly not disproved ; and a study of the facts serves to lessen its apriori incredibility. Of course, it admits of no strict proof. In any case, the mind may retain a certain power of discrimination, even in sleep. A customary sensation is ignored ; but an unusual one may lead to a speedy waking. The smell of fire, the stopping of the train, the movement of the invalid, any suspicious noise or circumstance, will often arouse us, while a familiar or insignificant sensation has no effect.

If we take the rational activity of our self-conscious waking moments as a standard, the dream activity must appear as imperfect and abnormal. On this account some writers have affirmed a parallelism between dreams and insanity amounting almost to an identification. This amounts to no more than saying that a waking person whose mental activity remained as grotesque and incoherent as most

dreams would not be regarded as sane. It would hardly tend to clearness, however, to say that every sleeping person is insane.

Closely allied to sleep is the hypnotic or mesmeric condition. We have seen that in dreams the senses are not entirely inactive, and that we may to some extent direct the dreamer's thought and action by external suggestions. The marked feature of the hypnotic state, psychologically considered, is that the patient is especially sensitive to such suggestions. They are taken up with the same complete lack of criticism with which we take up any fancy which occurs in dreams. The result is the same failure to see the absurdity of the situation which is so characteristic of dreams. The reflective and critical activity is in abeyance, and the laws of association and the operator are free to sport with us. The state is further accompanied at times by an extraordinary insensibility to pain.

This state is produced in various ways. Passes of the hand before the eyes, stroking the face, staring at bright objects, and in particular the expectation of the result, all produce this condition. The last element is so effective that Dr. Carpenter has founded his explanation of the facts on the influence of expectation. That this does not meet all cases is plain from the fact that the hypnotic condition can be produced in animals, such as rabbits and pigeons; and it has been suggested that the so-called "playing dead" of animals, as the opossum, is hypnotism produced by fear.

The immediate causes of hypnotism, like those of sleep, are not known. There is, however, universal agreement among investigators that the notion of an animal magnetism, or of a direct influence of the will of the operator, is sheer mistake when not fraud. The facts themselves are very curious; but the pecuniary exigencies of a public and popular exhibition are such that one is justified

in not accepting all that is said, or that appears at such shows, without several grains of salt. In general, there is a great difference in persons as to their sensibility to the so-called influence. For the best results an unstable nervous system and a loosely knit intellect are indispensable. In all cases the effect upon the nervous system is mischievous.

Insanity remains to be considered. If by sanity we understand the ideal working of all our faculties, we must say that it nowhere exists. The narrowness of prejudice, the mulishness of obstinacy, indifference to worthy things, and overwhelming interest in trifles, are customary, but abnormal, mental states. The term insanity, however, is generally reserved for cases where there is some marked delusion in perception, or some decided reversal of the ordinary estimates of the common relations of daily life. We consider only its mental aspect.

From the psychological side, the most prominent features of insanity are the existence of various hallucinations and sense illusions, profound changes in feeling and disposition, and the growing concentration of ideas within an ever narrowing circle, at the centre of which is the fixed idea. It is, however, pure superstition to fancy that any new and strange mental powers are revealed, or that any diabolical agency is at work. All the factors at work in the insane mind are found in normal mental action. The sweet bells are jangled out of tune; but it is the same set of bells.

If from any cause the sensory nerves become abnormally sensitive, and tend to produce queer sensations, we have all the conditions for the delusions of the hypochondriac, etc. An abnormal physical state is produced; and this is interpreted by the person in accordance with various notions, customary conceptions, or current superstitions. If the visual tract is disturbed, then visions occur. If there is not sufficient strength of mind and range of knowl-

edge to recognize these in their illusory character, they furnish the occasion for boundless correspondent changes in the course of thought and action. When the physical disturbance is such as to hinder the higher forms of mental activity, insanity soon passes into imbecility.

Profound disturbances of feeling also arise, and modify the mental life; indeed, the claim is made that all insanity begins in disturbance of feeling. Such feeling demands interpretation, and the mind adjusts itself and its thoughts to it. The specific notions arising depend upon the individual experience. The person may think himself persecuted or forsaken, saved or lost. The idea once suggested will gather the whole mind to itself, and even force itself upon external experience. The patient is surrounded by angels or demons, friends or enemies, all alike imaginary. The end of this state is to narrow consciousness down to a fixed idea, in which all rationality is slowly extinguished. The self-control which is necessary to a rational life is lost; and all the mentality that is left is simply the chaotic movement of the associative mechanism, and the automatic movements resulting therefrom. In short, from such a connection of soul and body as has been described in the previous chapter, from the known action of the laws of association when freed from rational control, and from the tendency of the mind to give a rational form to all its experiences, the facts of insanity are easily explained in principle as outcomes of familiar laws.

The ground of insanity is always assumed to be physical. While we have no wish to dispute this, it can hardly be said to be made out. In many cases some physical ground can be shown; but in many others nothing can be discovered which has not been found in the brains of sane persons. Of course, we may say there may be "lesions" below vision; but while their non-appearance does not certainly disprove their reality, it can hardly be said to prove

it. Still, there is endless room for speaking of disturbances of function, lowering of tone, variation of excitability, etc.; and withal, all use of medicine, it is said, must rest on the assumption that the disease is physical, and only secondarily mental. The original cause of insanity is indeed very often mental, — love, business, bereavement, religion, etc.; but it is assumed in such cases that insanity does not become established until the mental strain has wrought some abnormal change in the brain. Apart from this, the mind is supposed to have sufficient elasticity to recover its mental state. Still, it does not appear why an overmastering association, amounting to a fixed idea, might not be formed in the mind itself; and just as little does it appear why one might not “minister to a mind diseased” through the body, so long as the latter has influence upon the former. In any case, mental treatment is quite as important as physical, both for prevention and for cure.

The claim is often made that extraordinary powers and processes sometimes manifest themselves. Clairvoyance, direct relations with persons otherwise than through the senses, mind-reading, various spiritualistic performances, are illustrations. The apriori possibility of such things cannot be denied; but before any faith is put in them the alleged facts should be subjected to the most rigid scrutiny. Apparitions in general admit of easy pathological explanation. In the other matters the amount of demonstrated fraud is so great as to cast the strongest suspicion over the whole. All the circumstances, too, are suspicious, such as the need of working in the dark, or of being out of sight, etc. Of course, we can say that the spirits cannot write upon a slate in plain sight; but most minds will find the hypothesis of knavery quite as adequate to the facts, and more in line with the continuity of experience. In general, there is a very strong presumption against any alleged fact which stands apart from the established order of life.

Telepathy, too, cannot be proved impossible, and in itself it would not be any more mysterious than the common facts of perception; but, for the reason just mentioned, the utmost care must be exercised in determining the facts before placing any faith in them; and then a certain lukewarmness is highly to be recommended. One would need to know the character and mental habit of the person reporting such an experience, and also the nature of the apparition or impression, and whether the later experience had not given the impression a vividness and definiteness in memory which it did not originally have. Consideration of these and similar points will generally reduce the marvel to very slight dimensions. Indeed, we have never known a single case of these extraordinary powers, processes, and events which on examination did not resolve itself either into vulgar trickery or into a thoughtless magnifying of the commonplace into the marvellous.

